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American Journal of Public Health

And *The Nation's Health*

Volume XIX August 1929 Number 8

Chance in Diphtheria Mortality

LEE

International Health

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Iodine in Water

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Fifty-Eighth Annual Meeting
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American Journal of Public Health
and THE NATION'S HEALTH *Vol. XI No. 8*

Volume XIX August, 1929 Number 8

The Factor of Chance in Diphtheria Mortality

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THE present decade is the beginning of a new era in public health as far as diphtheria is concerned. Although the method of active immunization against diphtheria was discovered in 1912 it was not until 1922 that it was done on a scale of sufficient magnitude to influence the mortality rates. At that time the death rates from this disease were about 20 per 100,000 population. By 1925 the rate had steadily fallen to around 6. In 1927 throughout the United States and Canada the rates have tended to increase, averaging around 8. In the meantime 6 cities of over 100,000 population have reduced rates to close to zero and several smaller cities and counties have done likewise. There is scarcely a city or hamlet on this continent that has not used diphtheria immunization to some extent and yet the disease, after reaching its low level two years ago, is increasing.

Has diphtheria immunization failed to check diphtheria? Is the increase in the death rates real or apparent?

Immunization with either toxin-antitoxin or toxoid will prevent diphtheria in exact proportion to the extent of its use in the population under 10 years of age. This has been demonstrated in several cities of the United States and Canada. The greatest amount of immunization work has been done among school children, but very little has been done among the preschool population. In so far as the latter group has been neglected, the results have failed to lower significantly the general diphtheria mortality rates.

If we wish to estimate the significance of the present rise in the diphtheria death rate we must base our judgment on past experience.

The reliability of our final judgment must be proportional to the amount of reliable data on which it is based. Data for 10 or even 20 years are not enough for our purpose, especially when we have reliable data for 50 years available. Data for three communities are submitted here as samples of a large series, each one representing, in a general way, a different class.

The data have been plotted as the logarithms of the diphtheria death rates on plain cross-section paper. The slope of the trends has been determined by inspection. The positions of the trends have been adjusted so that the sum of the deviations of the rates from the trends in each instance is zero. The Standard Deviation (S. D.) is a measure of the annual fluctuation of the rates above and below the trend and is the square root of the average square of the deviations of the rates above and below the trend. Parallel lines are drawn above and below the trend line at distances of the S. D. and 2 S. D.

According to the laws of chance, frequencies in a series of chance events will distribute themselves about their mean or trend in such a manner that 66 per cent will fall within the range of the S. D. plus or minus, 95 per cent within the range of 2 S. D. with 5 per cent beyond. The 2 S. D. lines indicate the range, within which the rates may fluctuate from year to year, due to the influence of chance alone.

The accompanying graphs show that diphtheria death rates scatter about their trend in a manner similar to what would be expected were their distribution governed solely by chance. But other factors than chance operate in diphtheria. Contact between cases or carriers and susceptible individuals influences the prevalence of the disease. Natural active immunization of the population following an epidemic probably tends to cause the disease to progress in waves, with intervals of 10 years, more or less, between the peaks, as shown in Figure II. The trends in all three graphs are equal in slope, and in Figures I and III have continued in the same general slope for over 50 years. Note that the general average death rates represented by the trends are lower in New Haven than in Massachusetts, and those of Toronto are the highest. The average for each series as calculated from the trends for 1895 and 1928 are as follows:

	NEW HAVEN	MASSACHUSETTS	TORONTO
1895	39.0	50.0	77.5
1928	5.9	8.6	13.2

Diphtheria in New Haven has always been relatively low and in Toronto relatively high. Just what factor or factors have operated to cause this variation in death rates in the various communities, or the general depression of the death rates, is matter for speculation.

Diminished virulence of the causative agent, increased resistance of the population, increased use of antitoxin, quarantine and isolation of cases and carriers, with other factors, known and unknown, probably have had a part in the general reduction. After studying the course of this disease over a long period of years and in different situations, one cannot but be impressed by the predominance of the factor of chance in influencing the distribution of mortality.

Observe the data for Massachusetts—Antitoxin was introduced in 1895, and by 1898 the death rate dropped over 60 per cent. At that time there was reason to believe that the use of antitoxin had caused this change. The deviation is nearly 3 S. D. below the trend, and if only the data from 1875 to 1898 had been studied the deviation would have been still greater, probably 4 S. D. Such a drop might occur by chance, two or three times in 1,000 years. Had this experience been repeated in 1899 it would have been significant; but instead, the next year the rate was back at about its previous level. This transient drop was undoubtedly a chance phenomenon. A great part of the depression disappears if the data are calculated on the basis of the epidemiological year, September 1 to August 31, as indicated by the dotted curve in the graph. In 1926 the rate dropped again below the range of 2 S. D., returning to within this range in 1927. This drop is not significantly altered when the data are based on the epidemiological year. Such a drop beyond 2 S. D. is expected in a chance series about five times in 100 years, therefore, is not statistically significant. A certain amount of toxin-antitoxin has been used in the state in the last few years and may have had an influence in this drop; but whether or not this is true, the fall in the rate was insufficient to be considered significant, and may have been a purely chance occurrence. On the basis of the experience of Massachusetts since 1875, the expected average rate for 1928 is 8.6, with a possible deviation from that average to anything between 6 and 13, due entirely to chance, and neither extreme could be considered good or bad. The 1928 rate was again slightly below the 2 S. D. line and the rates for the next few years will show how significant is the reduction in the rates since 1925.

Figure IA shows the data for Massachusetts plotted on plain cross-section paper as numbers. This is the ordinary graph with which everyone is familiar. The lines representing the trend and S. D. and 2 S. D. are transposed from the logarithmic graph, converted into numbers and plotted arithmetically. Note that the space between the lines representing + S. D. and + 2 S. D. is wider than that between — S. D. and — 2 S. D. If we measure the spaces and compare them with the data their relative positions represent, we find that

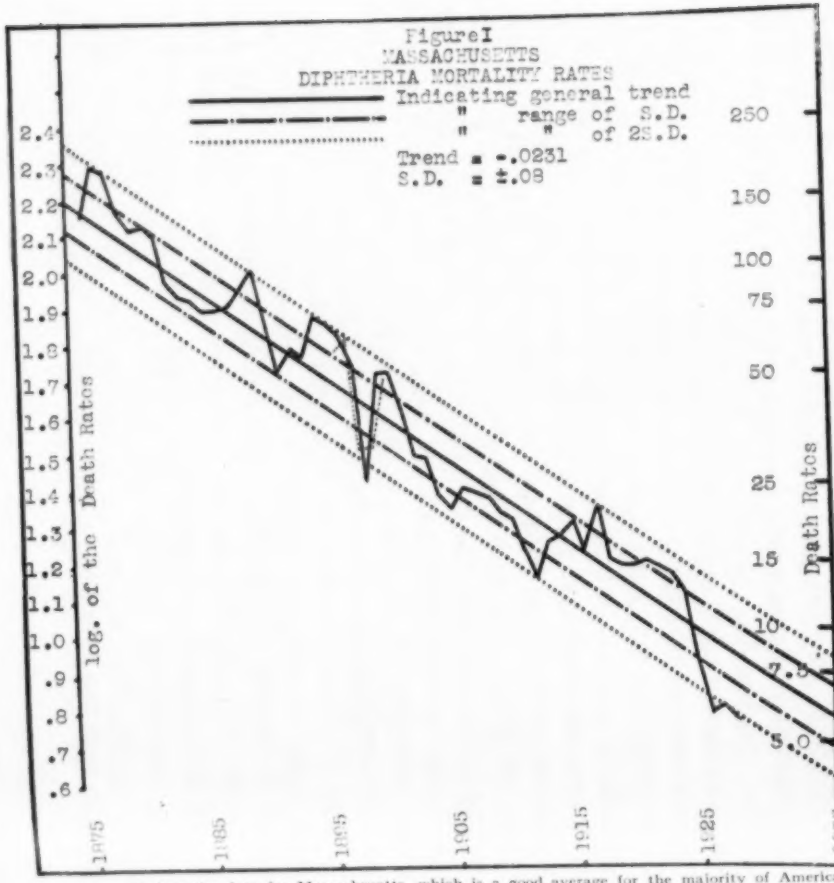


Figure I gives the data for Massachusetts, which is a good average for the majority of American states, with an average diphtheria mortality rate of about 8.5.

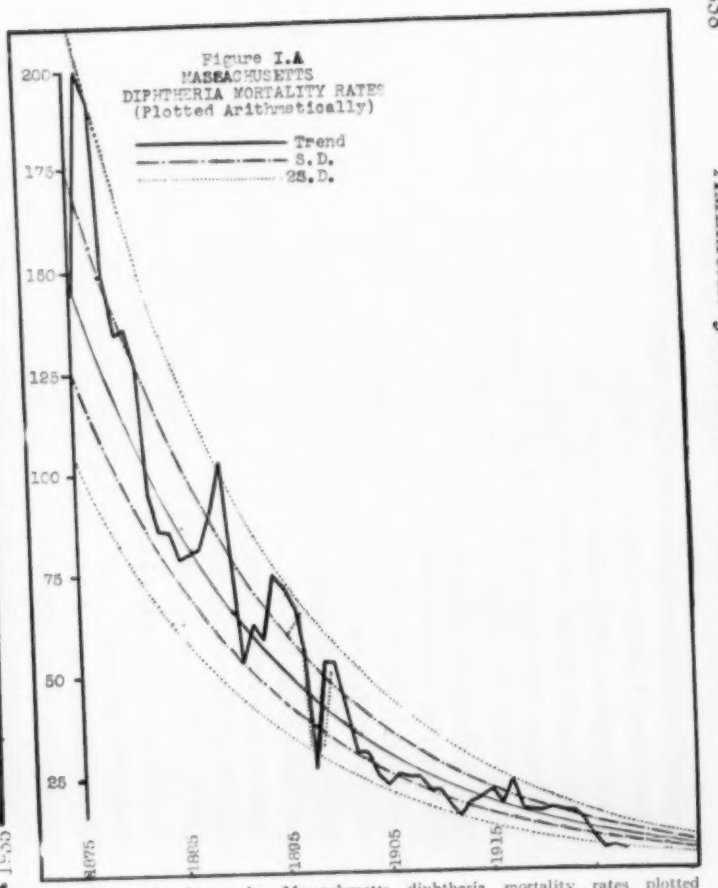


Figure IA shows the Massachusetts diphtheria mortality rates plotted arithmetically.

the ratios are equal. Note also that the lines representing the trend $\pm$ S. D. and $\pm$ 2 S. D. starting at 1935 and looking backward, diverge fanwise. This is due to the change in the magnitude of the data.

Note that in the arithmetic graph the data prior to 1900 are very unstable, while those since 1900 fluctuate only slightly. Compare this with the logarithmic graph and it will be seen that there the data fluctuate equally all the way. This difference in the fluctuations is apparent only, due to the change in the magnitude of the data. Although the actual fluctuations are greater, they all bear the same ratio to the general trend all the way along. Note also that practically all the data fall within the $\pm$ 2 S. D. lines as in the logarithmic graph.

Observe the Toronto data, Figure II. The population of Massachusetts is six times that of Toronto and the log. of the S. D. for Toronto data is exactly twice that for Massachusetts, due to the difference in population. If chance alone were operating, one could say that in 1928 the chances would be two to one that Toronto would have a diphtheria death rate between 20 and 9, and a chance of nearly one to two that it would be between 20 and 29, or between 9 and 6.3 with one chance in twenty of the rate exceeding either of the extremes. In 1928, the rate dropped to 8.2. It is impossible to estimate the influence of the immunization of 21,000 children in 1927 in this reduction. It was no doubt a factor, but greater reductions have occurred in the past without the aid of immunization and the reduction is well within the range of chance fluctuation. We must wait a few more years before we will see significant effects of immunization in Toronto.

Next consider the graph for New Haven, Conn. In calculating the S. D., the years 1924–1928 were not included, for these data have obviously been influenced by another factor not operating the previous years. The population is about one-third that of Toronto and consequently the S. D. is greater. In 50 years prior to 1924 the death rates deviated three times from the general trend by slightly more than 2 S. D., which is statistically insignificant. In 1924 the death rate dropped below the trend line a distance of 3 S. D., an event that might have occurred by pure chance about once in 500 years. In 1925 the rate was the same, and might have occurred likewise by chance once in 250,000 years. Then in 1926 the rate exceeded 5 S. D. and in 1927 nearly 3 S. D. again. It is therefore obvious that a new and potent factor was at work in New Haven beside that of chance. As a matter of fact, since 1923, New Haven has, among other public health activities, immunized about one-half its susceptible children against diphtheria and the result is exactly what one would expect. If in 1925 the death rate had been 2.7 or more, instead of 1.7, the drop of 1924 would have

Figure 1 gives the data for Massachusetts, which is a good average for the country as a whole, with an average diphtheria mortality rate of about 8.5.

arithmetically.

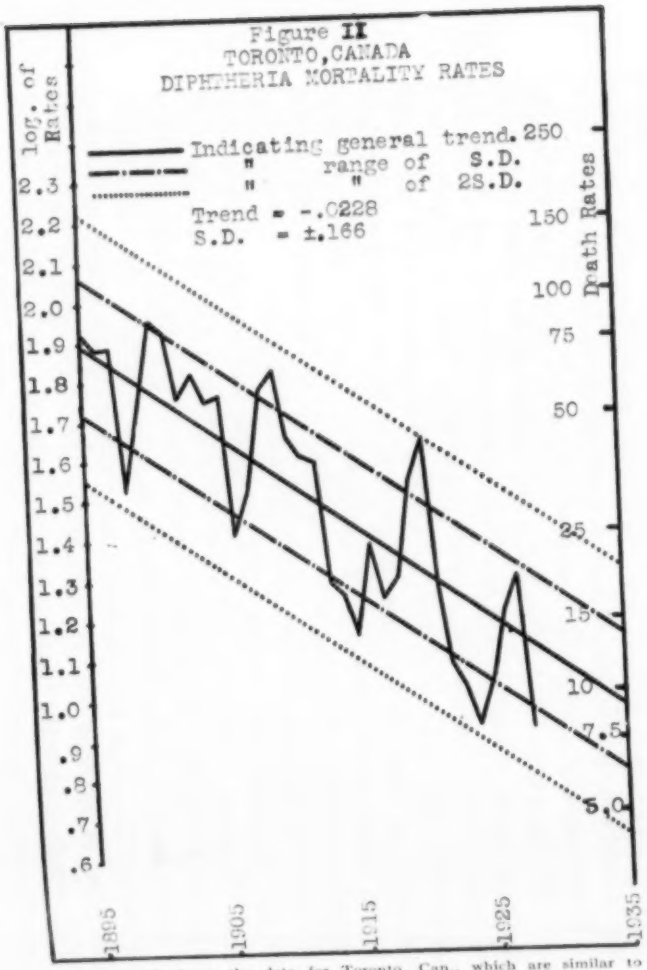
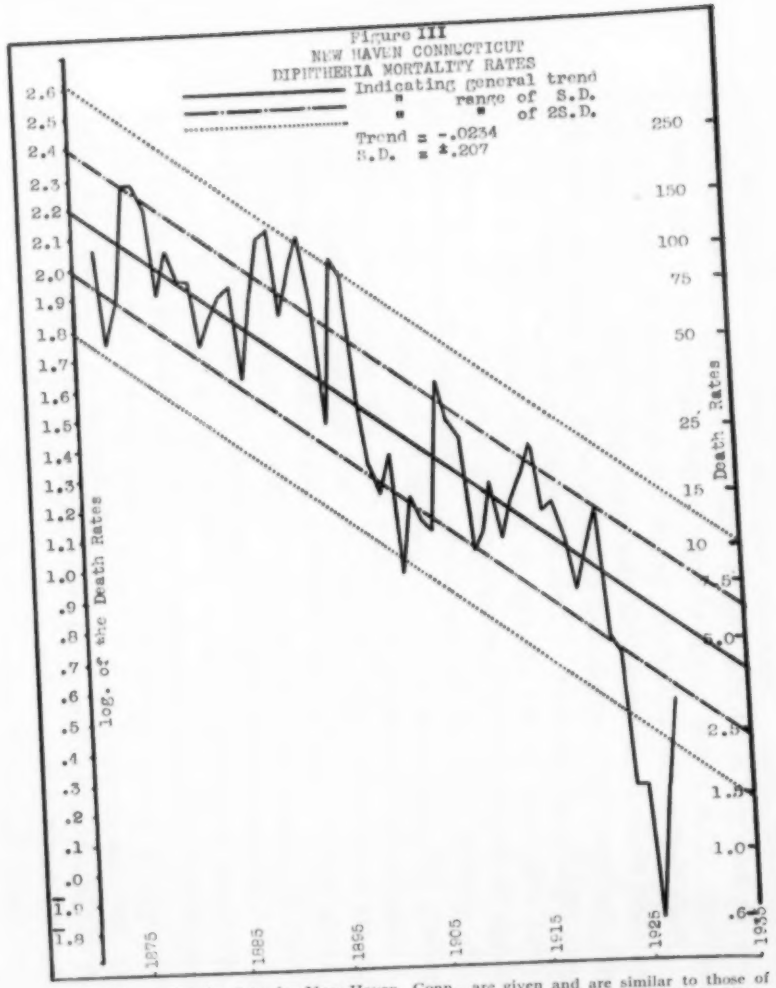


Figure II shows the data for Toronto, Can., which are similar to those of Detroit, Mich., Cleveland, O., and other cities, and represent a group with a relatively high diphtheria mortality rate of around 15.



In Figure III the data for New Haven, Conn., are given and are similar to those of Hamilton, Can., Auburn and Syracuse, N. Y., Cambridge, Mass., and St. Paul, Minn. This graph represents cities in which intensive diphtheria immunization has been done and in which the death rate has subsequently fallen.

been of doubtful significance, especially if, following 1925, the rate had continued between 2.7 and 6.3 as would have been expected had toxin-antitoxin not been used. As it is now, irrespective of what may happen in the future, the data show that some factor has operated to reduce New Haven's diphtheria death rate, and we have reason to believe that the factor is toxin-antitoxin immunization of one-half the child population.

Diphtheria mortality rates in Indiana, calculated on the basis of the epidemiological year, fell from 24.1 in 1921 to 5.4 in 1926, but in 1927 and 1928 the rates were 6.8. Indiana data go back to 1900 only, hardly sufficient time to draw definite conclusions, but what data we have, when compared with the older data of other states, show that the extremes of 1921 and 1926 are within the range of chance distribution. On the basis of 28 years' experience, the expected average for the coming year is about 7 with a range of fluctuation due to chance alone of anything between 4 and 13.

When chance is a factor of such great importance in the distribution of our death rates, it seems to be a waste of energy to worry over a fluctuation of one to five units in a death rate, provided always that the scattering of the rates, as measured by the S. D. of the data under consideration, is not of sufficient magnitude to disturb significantly the general trend of the series.

As far as the writer has observed, only 8 cities in Canada and the United States have to date immunized a sufficiently large proportion of their population under 10 years of age, so that their diphtheria death rates have dropped below 2 S. D. of their data. In cities under 100,000 population the data are so unstable due to the size of the population that, with the average expected death rate around 10, the S. D. is so large that a reduction of the death rate even to zero can hardly be statistically significant unless the favorable rates are repeated as they were in Auburn, N. Y., 1925–1927, when the rate remained at zero for the 3 years in succession.

In many of our great cities, immunization has been carried on for years in the schools, yet their diphtheria death rates continue on within the normal range of the general trend, due no doubt to the fact that a large percentage of the immunization work has been done among children of the older age groups.

Diphtheria immunization is an undertaking of great magnitude and wonderful possibilities, and requires intensive work concentrated on the 0–10 year age group. According to the experience of the cities where this has been done the death rate will not be lowered significantly, so that it will drop more than 2 S. D. below the general trend

Figure II shows the data for Toronto, Can., which are similar to those of Detroit, Mich., Cleveland, O., and other cities, and represent a group with a relatively high diphtheria mortality rate of around 15.

In Figure III the data for New Haven, Conn., Cambridge, Mass., and Syracuse, N. Y., Hamilton, Can., Auburn and Syracuse, N. Y. This graph represents cities in which intensive diphtheria immunization has been done and in which the death rate has subsequently fallen.

for the city, until about one-half the child population has been immunized.

The S. D. is a yardstick which is invaluable to health officers as a means of measuring statistically the results of work done in a community. By means of such measurement, one can avoid the error of attributing to health activities events that are due to pure chance and good luck. It likewise affords us a measure whereby we may estimate the significance of the deviation of our death rates from the general trend, thereby apportioning to each datum its true value in relation to past experience and future probability.

SUMMARY

1. Beginning in 1922 diphtheria mortality rates have tended to fall, reaching a minimum in 1925–1926, since which time they have shown a tendency to increase from one to three units. This increase is entirely insignificant, and is what we would expect merely from the operation of pure chance, as is shown by the graphs for Massachusetts, Toronto and New Haven. These data show that rates may scatter from three to ten units above or below the average rate, depending on the size of the population involved, without significantly disturbing the general trend of the death rates.

2. Although a considerable amount of diphtheria immunization has been done in every city, there are only a few cases where enough has been done to lower the death rates significantly.

3. In cities where diphtheria deaths have been significantly lowered, it was accomplished only after about one-half of the susceptible population under 10 years of age had been immunized.

4. If we wish to judge the relative value of recent data or project our estimate into the future, the value of our judgment will be proportional to our knowledge of past experience. As an efficient aid in such calculations, the trend of the data is a stable and reliable landmark from which to work, and the Standard Deviation is a yardstick readily obtained.

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International Health*

FRANK G. BOUDREAU, M. D., C. M.

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ORGANIZED international collaboration in hygiene is no longer a matter of experiment, but is, after some 7 years of trial, an accepted fact. It is perhaps not too much to say that the public health services of the various governments have come to realize the value of the facilities offered at Geneva for fruitful collaboration in the study and prevention of disease; and the use of these facilities has become in many cases a matter of routine. I should like to emphasize the need for such collaboration, and to attempt to show that the international health work of which I speak is only one of the activities of an organization created by a large majority of the countries of the world, and now maintained for the purpose of organizing their external relationships in the increasingly complicated world in which we live.

The need for international health work was felt long before any international health organization existed. About the middle of the 19th century the improvement in communication and transportation and the growth of industry and commerce, which had the effect of lessening the effective size of the world and of decreasing the economic independence of the various countries, created an unprecedented network of international relationships which obviously required organization if even a semblance of order were to obtain. Problems arose which required for solution the common action of a number of countries. When a problem became particularly acute a government took upon itself the responsibility of calling an international conference, and during the last half of the 19th century such conferences became more and more numerous. These pioneer attempts to solve problems arising in the international field were not always crowned with success, and the experience with the international sanitary conferences illustrates the difficulties and disappointments involved.

The first international sanitary conference was called by the French Government in 1851, in order to secure agreement in matters of maritime quarantine and to obtain united action in the prevention of cholera and plague. It was hoped that the issue of such a con-

* Presented at a General Session of the American Public Health Association, at the Fifty-seventh Annual Meeting at Chicago, Ill., October 17, 1928.

ference would be a convention or agreement among the participating countries prepared by the conference, signed by the delegates, and later ratified by a sufficient number of governments to bring it into effect.

A number of such conventions or draft agreements were prepared by the 20 sanitary conferences held during the last half of the 19th century; but it was not until 1893, 42 years after the first one was held, that a sufficient number of governments ratified a sanitary convention to make of it an effective instrument of international intercourse. In considering the progress of international health work today difficulties such as these obtaining so recently must be borne in mind.

While international sanitary conferences were being held, the governments were attempting to solve problems in other fields by the same means. Thus, postal affairs came up for consideration by international conferences, and this important matter was solved by the creation of a Universal Postal Union in 1878. Those who may be interested in the organization of international relationships should read the brochure on this subject written by Prof. John F. Sly.[1]

The growth of commerce and industry forced other problems on the attention of governments, so that international conferences were called to deal with such problems as universal standards of weights and measures, the gauge of railroad tracks, customs declarations, telegraphic communication and others which new world conditions had made of interest to many instead of to only one or two countries.

Experience showed that if international conferences were to achieve their object of securing general agreement, they must be well prepared, the views of the various governments being ascertained and exchanged beforehand; they must be properly conducted with adequate provision for interpretation and secretarial work; and some neutral agency must make a business of following up the matter so that the convention or agreement secured would not become a dead letter.

These desiderata were obtained in the case of postal affairs and weights and measures by the creation of international organizations with permanent secretariats, which have been called little Leagues of Nations, established for the purpose of organizing international relationships in a particular field, and providing machinery for the continuous collaboration of the governments in respect of that problem.

International sanitary conferences which met at intervals of from 4 to 6 years after 1851 emphasized the need for a permanent international health organization; but it was not until 1907 that such an

organization was agreed upon at an international conference held in Rome.

CREATION OF OFFICE INTERNATIONAL D'HYGIENE PUBLIQUE

The organization, known as the Office international d'Hygiène publique (International Public Health Office) began to function, with headquarters in Paris, in 1908 and since then has had a continuous and useful existence.

It consists of a standing committee meeting twice a year at Paris, and a small permanent secretarial staff, including a director and the necessary clerical assistance. The committee is composed of representatives of the public health administrations of those governments which have ratified the Rome arrangement (some 45 at present) and as these representatives are briefed by their governments they sit on the committee as government representatives.

The Office international d'Hygiène publique was the agency entrusted with the application of the international sanitary convention, which was redrafted in 1912 at a conference held in Paris, and again redrafted in 1926 at another conference called for the purpose by the French Government.

In the meantime the World War had seriously interfered with all organized international intercourse, while creating a situation in which international problems had become more numerous and acute. It was in these conditions that the Health Organization of the League of Nations was created.

PLAN OF THE HEALTH ORGANIZATION OF THE LEAGUE OF NATIONS

It is needless to describe the steps leading to the establishment of the present Health Organization. Nevertheless, I must insist on the importance of certain features of that organization in order to show the difference between present and pre-war conditions, and to permit you to judge how well the present facilities for international collaboration in hygiene measure up to the existing needs and opportunities.

The present Health Organization of the League consists of three parts:

Advisory Council
Health Committee
Permanent Secretariat

Advisory Council—The Advisory Council is constituted by the Standing Committee of the Office international d'Hygiène publique, previously referred to. This committee, composed as it is of delegates from the public health services of some 45 governments, is well fitted

to act as an advisory council and to speak for the health administrations of the world on any policy or activity relating to international health. It receives all reports of the Health Committee, which may refer to it any matter in which its advice or opinion may be desirable. While this committee thus serves as an advisory body for the Health Organization of the League of Nations, the fact that it is a separate and independent international organization must not be forgotten.

Health Committee—The Health Committee of the League is a body of experts in hygiene set up to advise the Assembly and Council of the League on matters relating to international health. There are 24 members (3 from the United States). This committee meets twice a year, usually at Geneva, and all its resolutions must be approved by the Council of the League before they are acted upon.

There are two fundamental differences between the Health Committee of the League and the Standing Committee of the Office international d'Hygiène publique:

1. The members of the Health Committee do not sit on that committee as delegates of their governments. They are simply selected as health experts in their capacity as individuals, which explains the presence of members from countries which have not adhered to the Covenant of the League of Nations.

2. The Health Committee is a part of a much larger international organization, and its work is bound up with that of other organs of the League.

Permanent Secretariat—The Health Section is a part of the General Secretariat of the League of Nations, a body of permanent officials which has been likened to an international civil service. It consists of some 15 physicians of various nationalities and the necessary clerical assistance. The majority of the Health Section is to be found at Geneva, the seat of the League of Nations, but it has another important seat at Singapore.

RELATIONS OF HEALTH ORGANIZATION WITH OTHER LEAGUE ORGANS

The League of Nations itself consists of an Assembly, a Council, and a General Secretariat. The Assembly is made up of 3 delegates from each State Member, and these meet regularly in Geneva every September for a period of from 3 to 4 weeks. Press accounts of the Assembly emphasize the plenary sessions and the general debate, frequently on political questions, but the work of the committees into which it is divided is not frequently mentioned; yet these 6 committees carry on some of the most important work that is done in Geneva. Two of these committees are concerned with the work of the Health Organization—the Second and Fourth.

The Second Committee of the Assembly reviews the work of the

technical organizations of the League, of which there are three, Health, Financial and Economic, Communications and Transit. Reports on the work of the Health Organization during the past 12 months are received by the Second Committee; there is a general debate on the subject, and a rapporteur is appointed who prepares a report for submission to the Assembly summarizing the debate and ending in a resolution of approval. During the debate there may be criticism, approbation, and proposals for new work. During the last session of the Assembly, for instance, delegates from Australia, Japan, Spain, Poland, India, Italy and Holland spoke in warm terms of the value of the Health Organization's work, and Mr. O'Sullivan, Minister of Public Instruction in the Government of the Irish Free State, prepared a report which was presented to a plenary session of the Assembly and approved. You will therefore appreciate that the Health Organization of the League possesses an important relationship with the Assembly itself, so that international health problems are discussed not only in Assembly Committees but also in plenary sessions.

The Fourth Committee of the Assembly considers the budget of the Health Organization. This year the budget for 1929 was approved as presented to that committee.

The Council of the League, which usually meets four times yearly, and consists of 9 temporary and 5 permanent members, must approve resolutions adopted by the Health Committee before they become effective. One of the members of the Council is appointed rapporteur on health, and it becomes his duty to prepare a report for the Council's consideration. For several years the distinguished delegate from Japan has acted in this capacity. This year the rapporteur on health is the delegate from Spain. The Council may refer any health problem to the Health Committee for advice and this has been done not infrequently in the past. The Assembly also frequently refers international health questions raised by the delegates to the Health Organization for advice or investigation.

The General Secretariat of the League, referred to above, is under the direction of a Secretary-General. It is divided into Sections, each with some particular preoccupation, such as health, finance, economics, disarmament, etc. As the Health Section is an integral part of the General Secretariat it is natural to presume that the relation of health questions to other international problems will be given due recognition.

The Health Organization has important relations with other organizations of the League. For instance, it is jointly concerned with the Financial and Economic Organization, in the settlement of Greek and Bulgarian refugees. The Greek Refugee Settlement Commission

and the similar Commission set up by the League to deal with the problem of Bulgarian refugees found that questions of health must be settled before progress could be made. In both cases malaria was prevalent and in addition tuberculosis was rife among the refugees in Greece. On the recommendation of the respective commissions, the Health Organization was consulted and is now collaborating actively with the public health services of both these countries in dealing with these problems.

The Health Organization of the League, like the League itself, is not so much an entity apart from the governments which form it as a method of facilitating the collaboration of those governments in the international field. Thus the very constitution of the Health Organization permits it to draw upon the most expert services available in the world to deal with any problem. Experts in the prevention of tuberculosis from various countries would gladly accept the invitation of the Health Organization to advise it in regard to the campaign in Greece, for instance, and the latter would have no hesitancy in calling for assistance from an organization in which she is a full partner.

The Health Organization has relations with that Section of the League dealing with Opium as well as Social and Humanitarian questions. It was called upon to define the maximum legitimate consumption of opium and cocaine for the International Conferences which drafted the opium convention now in effect.

The Mandates Commission, which reviews the annual reports of mandatory powers on their administration of mandated territories, refers to the Health Committee the chapters of these reports dealing with hygiene and public health.

The Organization for Communications and Transit is in frequent relationship with the Health Organization, as health questions and maritime quarantine seriously influence maritime traffic, and joint commissions have been set up by these two League organizations to deal with problems in which both are interested.

These are only a few of many examples which could be mentioned to show that the Health Organization derives much benefit from its position in a complete international organization, and, of course, the advantages are not altogether one-sided.

RELATIONS WITH THE "WINGS" OF THE LEAGUE

Two organizations, sometimes called wings of the League, to indicate that they have an independent existence, are the International Labour Office at Geneva and the Permanent Court of International Justice at the Hague.

The International Labour Office is an organization somewhat resembling the League itself, with an annual International Labour Conference instead of an Assembly, a Governing Body in place of the Council, and a General Secretariat in all respects similar to that of the League. It deals with questions affecting labour, and is therefore concerned with industrial hygiene. Necessarily certain aspects of industrial hygiene also interest the Health Organization of the League, and joint commissions representing the two organizations meet not infrequently to deal with such problems to the best advantage. Two such joint commissions are at present studying the preventive aspects of health insurance with a view to the improvement of the services and conservation of the resources available for the purposes of preventive medicine.

No question affecting the Health Organization of the League has so far come up before the Permanent Court of International Justice, but in case the Council of the League wished to ascertain whether the Health Organization was competent to deal with a particular problem, the Court might be asked for an opinion.

There is therefore a vast difference in the adequacy of the machinery for international collaboration available now and the more primitive forms elaborated in the pre-war period. At present machinery exists capable of dealing with almost any question affecting international relations, while before the little Leagues of Nations previously referred to were constituted, each to deal with one particular subject, no machinery existed for dealing with many others.

The Health Organization of the League as an organization is very young. Its possibilities have hardly been explored. In considering it we must not think of the small secretariat at Geneva, but rather of the great resources of the health administrations of the world, for the secretariat at Geneva exists simply as a means of facilitating the collaboration of those administrations.

WORK OF THE HEALTH ORGANIZATION

Of the developments the most important has been the establishment and organization of the Eastern Bureau at Singapore. I should like to call your attention to the fact that, alone among the organs of the League, the Health Organization possesses two technical bureaus, the one at Geneva and the other at Singapore.

Singapore has been well called the crossroads of epidemic disease, and here, the Health Administrations of the Far East recommended, would be the best place to establish a bureau of the League's Health Organization. Approval by the Health Committee and the Council

of the League was forthcoming promptly, and in March, 1925, the bureau began to function. The need for such a bureau had been demonstrated many years before, but in the international field something more than the demonstration of a need is required to provoke action. Before the League existed it required many weary years to secure international agreement in regard to such matters as quarantine, but when the bureau at Singapore was founded the League had already served its apprenticeship as a means of promoting and facilitating international action. In the case of this bureau, action followed recommendation as rapidly as could be expected.

The Japanese member of the Health Committee had in 1922 called the attention of the Committee to the epidemic situation in the Far East, and had recommended the dispatch of a mission to discover the amount and importance of the information available concerning the prevalence and control of epidemic diseases in the ports of the Far East. On the completion of the survey, a conference of the Far Eastern Health Administrations was convened, and as soon as it was ascertained that these administrations favored and would support such a bureau, the steps necessary for its establishment were taken, and the bureau began to function on March 1, 1925, receiving and transmitting information in regard to the important epidemic diseases in the ports of the Far East. During the first week this information related to 35 ports controlled by 12 administrations. Exactly 3 years later, the bureau was in weekly touch with nearly 140 ports, and now even this figure has been exceeded, while the scope of the information itself has been much increased.

The diseases concerned are cholera, plague, rat plague, smallpox, yellow fever, dysentery and any other prevalent or epidemic disease. The information is sent by cable to Singapore, immediately if it relates to a new outbreak, weekly if it has been prevailing.

All these cables pouring in from the Health Administrations which control the whole of the area bounded by the East Coast of Africa, Australia, New Zealand and the Pacific Islands, India, Japan, China and certain ports of Russia, are made into a coded message and broadcast by wireless on Thursday, Friday and Saturday of each week from 9 powerful broadcasting stations placed at the disposal of the Eastern Bureau by the governments to whom they belong. The message is still sent by cable to a few administrations which have not yet succeeded in picking up the wireless broadcasts regularly.

For the benefit of ships at sea, a number of less powerful broadcasting stations transmit the messages in clear so that the officers of

any ship equipped with wireless in Eastern waters may learn all that is known to the Health Administrations concerning the disease conditions in the ports at which she may touch. Information in regard to the movement of infected ships is also collected and distributed, and in 1927 the bureau notified the arrival of 165 ships infected with such diseases as smallpox, cholera, influenza, cerebrospinal meningitis, plague, and typhus.

The wireless message broadcast weekly by the bureau is supplemented by a weekly bulletin confirming the message and containing additional information of interest. The Health Administrations concerned send representatives to a yearly conference, known as the Advisory Council, in order to advise the Health Committee of the League on the conduct of the bureau. On the advice of the Advisory Council the work of the bureau has been extended beyond the limits first proposed. By means of its facilities the Health Administrations of the Far East are carrying on coördinated studies of plague, cholera, port quarantine, and the seasonal prevalence of epidemics.

While the Eastern Bureau of the League's Health Organization is a physical entity, it is also, like the League itself, a method of work, a means of giving effect to the desires of the Health Administrations concerned, for profitable international coöperation, an instrument for organizing and facilitating international relationships.

As you know, the Health Organization at Geneva collects and publishes epidemiological information from the world as a whole. Daily, weekly and monthly bulletins are distributed containing all the information received from the various countries. All the information received at Geneva, all the cables sent to Singapore, are the voluntary offerings of the Health Administrations concerned—no Health Administration is obliged by any international law or agreement to go to the trouble and expense of collecting and transmitting this information to Singapore or Geneva.

This will serve to emphasize the fact that the League has provided in the field of international health a means of giving practical expression to the desire, nay, to the need, of the various governments for collaboration in the prevention of disease.

INTERCHANGES OR STUDY TOURS OF PUBLIC HEALTH PERSONNEL

When the Health Organization of the League was first founded, its task was to promote the collaboration of the various governments which had pledged themselves by the terms of paragraph (f), Article 23, of the Covenant to " take steps in matters of international concern for the prevention and control of disease."

The international situation at that time was far from being as satisfactory as it is at present. Governments of countries lately at war were not readily disposed to collaborate. Yet there was great need for common action against epidemic diseases which were spreading from East to West and threatening to overwhelm the whole of Europe. Among the various methods of promoting international collaboration employed by the Health Organization of the League was the system of interchanges or study tours which has now become a permanent and fruitful activity. To clarify the subject let me describe an interchange which took place during the summer of 1928.

In view of the importance of rural hygiene it was decided to study this subject in several Eastern and Western European countries. Districts in each of these countries were visited by a member of the Health Section, and a detailed program of study prepared in collaboration with the Health Authorities concerned. The program included a review of the activities of every organization or agency having any influence on the health of the rural population.

An attempt was made to emphasize those features which were of particular interest in each country. For instance, practical public health education has attained a high development in the Kingdom of the Serbs, Croats and Slovenes; new and interesting schemes for sewage disposal in villages may be found in Hungary; health insurance has reached a high stage of development in Germany; in Holland, single water supplies for a number of villages have proved of great economic and hygienic value; the coöperative movement known as the Farmers' League in Belgium has not only raised the economic level of rural life, but is a potent force in public health education; while in some parts of rural France the health authorities have, by exceptional intelligence and ingenuity, applied a modern health program at a surprisingly low cost. These, it must be noted, are only a few of the many features of interest presented by each country.

After selecting the districts to be visited, competent health officers were requested to prepare booklets setting forth the main characteristics of rural hygiene, such as the organization, budgets, chief problems and activities of agencies other than the health organization which influence rural hygiene—in a word, descriptions intended to give to the visiting health officers as clear a picture as possible of all that makes up rural hygiene.

Sixteen public health officers and 7 sanitary engineers from 17 countries were invited to participate, and the booklets referred to were distributed in advance, so that each participant was in a position to profit from the tour. I had the pleasure of accompanying this

interchange from the beginning at Ljubljana on May 28, to the final conference held at Geneva on July 23, 24 and 25, 1928.

I am emphatically of the opinion that these interchanges furnish unique opportunities for the study of public health activity. No public health officer travelling alone for the same period can see anything like so complete a picture of public health organization and administration as is shown to the interchange group. Moreover, in the interchange on rural hygiene almost every phase of rural life was shown, so that the subject could be studied in its relation to the life and habits of the people. The great advantage of being able to examine at close range the varying activities of rural health departments in a number of countries differing sometimes widely in race, development, economic conditions and method of government, is too obvious to need emphasis. Also, the discussions which go on within the group are enlightening, for here the activities under consideration are seen from as many points of view as there are participants.

At the final conference in Geneva, nearly every participant stated that he had found something worthy of emulation in every one of the countries visited, and changes of importance in the health practice of a number of rural health departments will undoubtedly result. Health departments of countries in which interchanges have taken place have emphasized the benefit they themselves reap, partly as a result of the process of stock-taking necessary to present a clear description to the visitors, and partly as a result of the suggestions offered by the participants in the course of the informal and friendly discussions.

Since the system of interchanges was started in 1923, approximately 500 public health officers (including a few sanitary engineers and medical specialists) from 50 countries have participated, and approximately 40 countries have been visited. What have been the benefits?

I think no one would deny that these interchanges have fostered a splendid *esprit de corps* among the health services of the different countries. Perhaps this is the greatest benefit of all, and I am convinced that the cordial relationships established between health officials of different nationalities is of itself well worth the time and money spent for the purpose. But there are other and more practical advantages. There is the more general diffusion of knowledge concerning modern public health methods; there is more uniformity in public health practice, for the better methods are bound to be copied; and there is the accumulation of a common fund of knowledge as a result of friendly international comparison of experience and results. The

interchange is a powerful means of bringing about the reform of public health administration, and its results along this line have fully justified the expense involved.

POSTGRADUATE INSTRUCTION

Every public health officer needs to be reminded occasionally of the advances being made in the practice of preventive medicine. Postgraduate instruction in hygiene and public health is not sufficiently generalized to meet this need. And perhaps the system of interchanges fills this need more effectively than certain forms of postgraduate instruction, for in the interchange the participating health officer is enabled to witness the application of new public health methods in actual practice, where the results are most readily appreciated.

Variations of the interchange idea are the international courses in hygiene recently held in Paris and London and the malaria courses organized in London, Paris, Hamburg and Rome. These so-called continuation or " refresher " courses, organized by the Health Organization of the League in collaboration with the University of Paris and the British Ministry of Health, were an attempt to provide instruction to health officers on recent advances in the sciences underlying the practice of preventive medicine. The lecturers were selected from a number of countries, and were the individuals responsible for recent advances in our knowledge of such subjects as physiology, biometry, epidemiology, bacteriology, public health administration and sanitary engineering. The students were public health officers nominated by their administrations, and so popular were these courses that, at Paris, for example, nearly half of the group attended at their own expense or at the expense of the public health services to which they belonged.

The malaria courses are being organized for the fourth successive year. They are intended to afford, to public health officials charged with the campaign against malaria, theoretical and practical instruction in malaria control. The theoretical courses, lasting one month, are held at the institutes or schools of tropical hygiene in the several cities mentioned (at Rome in a school specially organized to teach malaria). The practical instruction, lasting 2 or 3 months, is given in Italy, Spain and Jugoslavia, where the student is enabled to assist in the campaign against malaria under the direction of experienced malariologists. These schools have enabled various governments to train staffs of malariologists in a short period of time, in order to deal with a pressing problem for which trained personnel had not been available.

Thus, by means of an international organization, the training facilities possessed by certain countries are being utilized by others not possessing these advantages.

It is hardly necessary to insist at greater length on the value of the system of interchanges. The Health Organization was enabled to organize this system through the generosity of the Rockefeller Foundation, which has continued its support for a number of years. The League itself makes a generous grant for this purpose, and successive Assemblies have insisted on the value and need for the extension of this activity.

STANDARDIZATION WORK

The need for common standards was early recognized by the American Public Health Association, which has achieved notable success in securing the adoption and extending the use of standard methods of water, milk and sewage analysis. Standard methods enable ready comparison, and uniform methods of recording results also facilitate international comparability. The setting up of international standards in respect to serums, biological preparations and serological reactions, has been a preoccupation of the Health Organization from the beginning, and although Dr. Madsen, the Chairman of the Health Committee, explained this work in detail at the Detroit session,* I must describe to you briefly the advances made since that time.

As a result of conferences convened by the Health Organization and of laboratory studies undertaken on its behalf by the leading public health laboratories of the world, agreement in regard to the units of a number of therapeutic serums such as diphtheria and tetanus antitoxins has been reached. This work was amplified during the past four years and now extends to anatoxin, anti-dysentery serum, scarlet fever toxin and serum, anti-gas-gangrene serums, tuberculin, standard serums for blood groups and the nomenclature of such blood groups. (I do not wish to imply that international units have been adopted for all these, but they are all being studied with that end in view.)

Furthermore a number of therapeutic substances requiring biological methods of testing have been studied with the object of international standardization. This group includes such substances as the salvarsans, digitalis, strophanthus, scilla, insulin, pituitary extract, thyroid preparations, ergot, filix mas and oil of chenopodium. This work requires considerable time, for stable preparations for reference purposes must be prepared. The responsibility for this work is usu-

* Madsen, Thorvald. Health Work of the League of Nations. Fifty-fourth Annual Meeting, American Public Health Association, Detroit, Mich., October 20, 1924.

ally entrusted to those individuals or laboratories which have had the greatest experience with the preparations in question.

Once a stable preparation is secured, the international unit adopted is expressed in terms of that preparation, and individual methods of testing are not as a rule interfered with. Samples of any of these preparations may be sent to the central laboratory for comparison with the stable preparation, and this work is done by a central laboratory selected on behalf of the Health Organization of the League, or samples of the stable preparation may be sent to the national laboratories desirous of making such comparisons. The Health Organization has no laboratory—all this work is done on its behalf by the various national laboratories, which again emphasizes the rôle of the Health Organization as a method of facilitating the collaboration of the different public health services.

The units adopted by the Permanent Standards Committee as a rule receive international recognition because they have been arrived at as a result of coördinated studies in the national institutes chiefly concerned, and no decision is made until agreement has been reached by the chiefs of the participating laboratories.

To members of the American Public Health Association it is hardly necessary to stress the desirability of such standardization work. It promotes better understanding among public health officials, the medical profession and laboratory workers; enables the value of improvements in methods of treatment to be appreciated more generally; and is a safeguard for countries where such preparations are not manufactured but must be imported from various sources. May it not be considered in the light of a common language, enabling technicians working with these preparations to understand more easily the communications of those having similar responsibilities in other countries?

INTERNATIONAL COMMISSION ON SLEEPING SICKNESS

During the last few years an interesting study of the etiology, epidemiology and prevention of sleeping sickness has been going on in Africa under the auspices of the Health Organization. A group of experts from the health services of England, Belgium, France, Germany, Portugal and Italy carried on for a period of 18 months a series of important field and laboratory investigations of this disease. The program was framed by an international conference of sleeping sickness experts convened by the Health Organization in London.

The Commission on Sleeping Sickness had headquarters at Entebbe on Lake Victoria in Uganda, and from this point its researches extended far into the field. The Commission was able to produce an

important volume on the epidemiology and prevention of sleeping sickness, and agreed on a number of administrative recommendations. This report and the recommendations are now being considered in Paris by an international conference of medical and administrative officers from the countries chiefly concerned.

I am sure you will agree that the steps taken to prepare and dispatch this commission to Africa, as well as to act on its recommendations, were logical and well advised. Working together as the members did in Africa, duplication of effort which might have resulted from separate investigations was avoided, and they had the great advantages of daily contact, exchange of ideas, and appreciation of results. I must add that the expense of the commission was borne by the participating governments—with a small grant from the Health Organization of the League.

INQUIRIES INTO INFANT MORTALITY

There are inquiries into the causes of infant mortality being carried on under the auspices of the Health Organization in selected urban and rural districts of England, Austria, France, Holland, Germany, Italy and Norway in Europe, and the Argentine, Brazil, Chile and Uruguay in South America. Several delegations to the Assembly of the League of Nations had asked the Health Organization to arrange an international study of the causes of infant mortality. The Health Committee of the League asked the advice of a number of child health experts, including Dame Janet Campbell of the British Ministry of Health, Pirquet of Vienna, Debré of Paris, Gini of Rome, Collett of Oslo, Gorter of Leyden, and Clark of the U. S. Public Health Service. These experts advised a study of infant deaths in selected districts of the countries listed above. This study applies to infants dying during the period of the inquiry, so that before and during the last illness every resource of science may be utilized in seeking the causes.

Interesting results have already been secured; for instance, there is a marked contrast between the causes of death as registered for official purposes and the real causes as elicited by the inquiry. The marked influence of prematurity on the infant death rate has been noted in all the European countries. Frequent meetings of the experts in charge of the inquiries guarantee that the studies will be carried out along similar lines and that the varying experience of the different countries will be comparable. A considerable amount of interest in the prevention of infant mortality has been aroused by this international consultation, which should lead to the better conservation of child life—perhaps by arousing healthy national rivalries. A

volume describing the results of the European inquiry will be issued in 1929.

HEALTH INSURANCE AND PREVENTIVE MEDICINE

A conference on Health Insurance was held last year in Geneva. To an American audience I presume this requires explanation, for health insurance on a governmental basis does not exist in the United States, and there has been serious opposition to the suggestion that it should be introduced. But in Europe health insurance is a fact, and its operation and results must be taken into account. As a rule health insurance is carried on under governmental supervision by more or less self-governing insurance organizations organized on a local or territorial basis. These organizations have been led by their unfortunate experience with such diseases as rheumatism and tuberculosis to attempt the application of preventive measures for the benefit of their members.

As the medical benefits accruing to the worker are usually also extended to the dependent members of his family, these organizations have been led to take measures for the protection of children and mothers. In view of the large populations involved (15,000,000 in England, nearly 40,000,000 in Germany, for example), and the comparatively large resources available, the efforts of health insurance organizations along preventive lines have quite naturally led to some duplication of services provided by governmental health agencies.

The Government of Czechoslovakia requested the Health Organization to take up the study of this question with a view to the more economical and effective prevention of disease. A conference on this subject was held last year in Geneva, under the chairmanship of Sir George Newman, Chief Medical Officer of the British Ministry of Health. There were present 6 representatives of public health services, nominated by the Health Organization of the League, and 6 representatives of health insurance organizations, nominated by the International Labour Office.

The Conference decided that the most practical way to proceed was to study the interplay of preventive effort in selected urban and rural districts of countries where different forms of health insurance were in force, in order to secure exact information on which to base recommendations for improvement and better coördination of effort. For instance, a sub-committee was set up to study tuberculosis prevention, another to report on the protection of mothers and infants, a third to deal with the measures applied to conserve the health of the child of school age, and so on.

These studies have been made, and the general committee will soon meet to discuss the results. I do not imagine that any dramatic reform will result immediately, for in this field change comes slowly. But here again is an example of a complex social problem of interest to a large number of governments being studied collectively instead of separately, with all the advantages inherent in this method, and the coördinating mechanism is again the Health Organization of the League of Nations.

The limits of space forbid me to go into further detail concerning the work of the Health Organization, although I have only touched superficially on a few of its activities. I have said nothing of the Malaria Commission which has been invited by the Indian Government to study the subject in India, and no reference has been made to leprosy, ship fumigation, rabies, smallpox and vaccination, cancer, vital statistics and syphilis, all of which are being studied in the international field by the Health Organization. These and other activities are described in the annual reports and other publications of the Health Organization which may be secured from the World Peace Foundation, 40 Mount Vernon Street, Boston, Mass.

As I have insisted throughout on the rôle of the Health Organization as a method of collaboration, I must not close without paying special tribute to Surgeon General Cumming, who has given us frequent evidences of his friendship, and has on many occasions extended to the Health Organization, and through it to the public health services of other countries, the collaboration and support of the U. S. Public Health Service.

The organization of international relationships in the complicated world in which we live may leave much to be desired; but may we not say that very considerable progress has been made?

REFERENCE

1. Sly, John F. Genesis of the Universal Postal Union. Carnegie Endowment, 1927.

Life is a Relay-race

LIFE is a great relay-race, and we cannot clearly see the goal. Each just runs his short lap and then hands on the torch. To one who nears the end of his lap it is a relief to know that young and strong runners are in sight. In these times science gives her prizes to the discoverer and treats the expositor with indifference; she smiles on the man who grows the corn, but overlooks him who bakes and distributes the bread. Yet for the welfare of knowledge both kinds of men are needed.—Foreword to *Good Health*—By Ian S. Thomson, 1929.

Coördination of Research on Sewage and Industrial Waste Disposal*

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PUBLIC health engineers are entering a new phase of stream pollution activities. Originally their efforts were directed almost exclusively against pollution affecting the public health. Later jurisdiction was extended to include welfare or comfort in order to include definitely those indeterminate conditions commonly designated as nuisances and which affect public health only indirectly, if at all. Recently public demand has necessitated consideration of pollution affecting fish and other aquatic life, that streams may be conserved in a reasonable state of purity for recreational and similar purposes.

The importance of domestic sewage in the transmission of communicable disease has justly focused the attention of health officials on this phase of the problem, notwithstanding the fact that in many cases the demand of industrial waste upon the oxygen resources of the stream is many times greater. Health officials have been loath to direct their efforts to pollution affecting fish life but are now finding it necessary to do so because of public demand, or else permit the establishment of such activities in other state departments which results in duplication of effort, misunderstandings and conflicting jurisdiction.

ANALYTICAL METHODS

The starting point with any problem of industrial waste disposal or stream pollution is analytical. Uniform analytical technic must be developed in order that the effect of the wastes upon the streams may be measured, and methods of disposal or treatment evaluated and reported in comparable figures. *Standard Methods of Water Analysis* was originally developed for the control of potable waters, but later extended to cover in a reasonably satisfactory manner the analyses of sewage and sewage effluents. Recently feeble attempts have been made to adapt these methods to the analyses of industrial wastes, but because of their greater concentration and composition

* Read at a Joint Session of the Public Health Engineering and Laboratory Sections of the American Public Health Association at the Fifty-seventh Annual Meeting at Chicago, Ill., October 19, 1928.

such a procedure is impractical without material modifications made according to the individual views of the chemist in charge of the particular work, which has resulted in great discrepancies in the technic used in different laboratories.

Probably the greatest difficulty or discrepancy in the application of *Standard Methods* to the analyses of industrial wastes is in the very essential biochemical oxygen demand test. Here little variations in technic frequently make considerable differences in the results. In one state tap water was originally used for dilution, but comparable results could not be secured in different sections of the state, so distilled water, to which 500 p.p.m. sodium bicarbonate has been added, is now used. Another state is using distilled water without the bicarbonate, and in others tap water is still being used. Investigations have indicated that the use of distilled water produces results about 35 per cent lower than tap or synthesized water. With such variations in technic, comparable and consistent results cannot be secured.

With the development of coöperative programs in waste disposal between industry and health officials, industrial chemists find it necessary to apply sanitary analyses to a study of their local conditions. In referring to *Standard Methods* they find essential explanatory data lacking regarding basic principles and the significance of the analytical procedure. A like situation exists with a student or other individual who is just taking up the question. In order to apply the analytical procedure successfully and uniformly there must be a rather definite understanding of the basic principles and significance of analyses. It seems, therefore, that *Standard Methods* should include more definite, descriptive basic data. In other words, the publication should be written more in the form of a text than at present.

WASTE UTILIZATION AND TREATMENT

Industrial waste disposal may be divided into three definite steps:

1. Utilization of the wastes within the industry, which is primarily a problem for industry itself, and should be given first consideration.
2. Treatment of the residual wastes after as complete utilization as practical, which is more specifically a problem for sanitary engineers and state officials in coöperation with industry.
3. Stream surveys to determine the effect of the wastes upon the stream, the extent of waste treatment necessary, and the results of improvement made, which is primarily a function of the state.

While utilization of the waste within the industry is essentially industry's problem, the sanitary engineer must keep in close contact with developments to correlate them with the second and third stages

of the problem. Some contend that treatment of the waste is wholly a problem for industry, but there is now a tendency toward assisting industry, through state departments, in solving this difficult problem. Certainly the sanitary engineer is in better position to suggest methods of treatment and direct coöperative activities because of his intimate knowledge of such processes, based upon his experience with domestic sewage. It is the writer's belief that while the major cost of developing treatment processes for industrial wastes should be borne by industry, the state should be in a position to lead, and in some cases direct, experimental work.

Industry's first and principal consideration—waste utilization—involves not only the question of stream pollution, but also economical considerations. Outstanding examples in this respect include:

1. Reduction of the population equivalent of wastes from the Corn Products Plant at Argo, Ill., from 370,000 to 50,000 by waste utilization, resulting in a saving of $3,000,000 for a treatment plant and a financial return of probably $500,000 annually in the value of recovered products.

2. The installation of $41,000 worth of equipment in a certain paper mill which reduced the fiber losses from $160,000 to $30,000 annually.

3. Recovery processes developed in the by-product coke industry which have provided economical methods of utilizing phenol wastes, a most objectionable source of pollution of public water supplies.

Industry needs to be awakened, however, to a realization that utilization of its waste is not only a question of financial return, but also of developing economical methods of waste disposal. While an installation may not result in a substantial financial return, it may provide an economical method of waste disposal.

Although there is room for improvement in methods of sewage treatment, accepted and practical methods have been developed and are in operation. There has been some study in regard to the treatment of certain industrial wastes, but in no instance has an accepted method been developed. Research in the treatment and disposal of industrial wastes is, therefore, one of the primary needs of the present time, and any program for stream improvement which does not take this into consideration is incomplete.

COÖRDINATION OF ACTIVITIES

New organizations or associations to study these problems seem unnecessary, but coördination of existing ones is essential. The administrative agencies should undoubtedly be the state departments of health. Provision for interstate agreements such as have been perfected in the Ohio River and Lake Michigan watersheds is desirable.

An advisory council on which all interests are represented is a valuable asset. Stream pollution cannot be controlled effectively by prohibitory legislation. In fact, such legislation is destructive and inimical to public interests. Legislation should establish an organization supported by ample funds to conduct a constructive, sustained, coöperative program in a study of the problem, both with reference to the effect of pollution upon streams and aquatic life thereof, and methods of waste utilization and treatment. Department of health activities in the various states may be adequately coördinated through the Conference of State Sanitary Engineers and the Public Health Engineering Section of the American Public Health Association.

There should be local committees representative of the different branches of industry in each state to coöperate with the state department of health. Such coöperative programs have already been inaugurated in at least 7 states—Minnesota, Wisconsin, Michigan, Ohio, Pennsylvania, Maryland, and Connecticut. In some instances these local committees have been formed at the request of the state officials, in conferences with representatives of the various branches of industry. Practically every state, however, has either an aggressive chamber of commerce or association of industries.

As representative of the American Paper and Pulp Association, the writer recently assisted in developing an organization through the Associated Industries of Connecticut in coöperation with state officials. The organization in Connecticut provided that the Associated Industries appoint committees representative of their respective branches of industry interested in the problem of stream pollution; the chairmen of these committees then constitute a central committee representative of industry in the state as a whole. Some nine or ten industries of Connecticut have been thus organized. It seems consistent that this policy be followed in other states where industry has not already been organized.

The organization of industry, however, needs to go further than state committees to provide adequate means for interchange of ideas and data. The pulp and paper industry, realizing the national scope of the problem, is organizing its activities and coördinating the work of its local state committees through its national organization, the American Paper and Pulp Association. It is believed that this industry is the first and only one to place a full-time representative in charge of these activities. The National Canners Association, however, has given some consideration to the problem and has coöperated in research conducted in various states.

The work of other industries could doubtless likewise be coördi-

nated through their national trade organizations. The national representatives of the various industries could then constitute a central national committee to act as a clearing house to assemble and disseminate data of general information. This national organization of industry could then coördinate its activities through the Conference of State Sanitary Engineers and the Public Health Engineering Section of the American Public Health Association. In fact it seems essential that such or similar channels of communication and types of organizations be developed if the most economical and practical methods of handling this problem are to be brought about.

SUMMARY

The essence of these remarks may be summarized as follows:

1. *Standard Methods of Water Analysis* should be revised and extended to cover more adequately the analyses of industrial wastes.

2. With proper coördination, existing organizations, including state or other local conferences of sewage plant operators, the American Society of Civil Engineers, Conference of State Sanitary Engineers, and the Public Health Engineering Section of the American Public Health Association, can satisfactorily handle research in sewage disposal.

3. The administrative agencies in control of all stream pollution activities should be the state departments of health, with suitable legislation and financial support.

4. Local state committees representative of the various industries should be developed in each state to coöperate with the state department of health. These local committees should be coördinated through a central state committee representative of industry as a whole.

5. The activities of the local state committees of each industry should be coordinated through the national organization of their respective industries.

6. National representatives of the various industries should constitute a central national committee to coöperate with the Conference of State Sanitary Engineers, Public Health Engineering Section of the A. P. H. A., Izaak Walton League, and others, in the exchange of ideas, collection and dissemination of data, and general coördination of all efforts.

7. Finally, public health officials and others interested in improving stream conditions, both in their local state activities and through their national organizations, should give more definite recognition to industry in consideration of the problem, and industry should be given ample opportunity to express itself regarding the various problems.

Outbreak of Botulism, Westfield, N. Y.

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On December 29, 1928, I received an emergency request from Elmer W. Powers, M.D., Health Officer of Westfield, N. Y., to go with him and Van S. Laughlin, M.D., to see some cases which were puzzling them as to diagnosis.

The two cases which I saw were typical of botulism. Three had died before I arrived, but the histories, given by Dr. Laughlin, indicated that they were also typical botulism. I made a rather brief investigation which revealed the following facts:

A dinner was given at the home of James Dina, Westfield, N. Y., on Christmas day, at about 4 P.M. The company, 24 in number, represented two families living in Westfield and one in Fredonia, and was made up about equally of adults and children. The food consisted of freshly killed chicken, macaroni and cheese, bread, potatoes, green and yellow home-canned string beans.

The following cases had occurred up to the time of my visit:

1. Mrs. James Dina, age 55, first showed symptoms of illness on December 26 at about 4 P.M. She was slightly nauseated at first and vomited a little; later she began to have difficulty in articulation and deglutition, gradually growing worse. When I saw her she could neither speak nor swallow. She complained of difficulty in distinguishing objects. Her pupils were dilated, with sluggish response to light. There was great muscular weakness and an accumulation of mucus in the throat which she was unable to cough up. There was no rise of temperature at any time, but a rather rapid pulse. She died at 6 P.M., December 29.

2. Santa Mella, age 4, living at Fredonia, became ill December 27 early in the morning. She vomited a little, soon became helpless, had difficulty in articulation and deglutition, and an accumulation of mucus in the throat. She died on December 27, at 11 P.M.

3. Josephine Grizanti, age 4, became ill December 27 at 9 A.M., and showed the same symptoms as described. She died December 28 at 10 A.M.

4. James Grizanti, age 22, was taken ill on the evening of December 26. Dr. Laughlin saw him first on December 28 at 5 A.M. He vomited frequently, and was the only one of the cases who complained of abdominal pain. There followed difficulty in articulation and deglutition. He died on December 28.

5. In Sam Dina, age 14, the onset of illness was December 27, about 4 P.M. He had difficulty in swallowing, dilated pupils, with slow response to light. He died three or four days later.

6. Rose Dina, age 9, became ill December 28, about 4 P.M. She vomited at

intervals, had no pain, no difficulty in swallowing, no rise of temperature, a normal pulse, but dilation of the pupils. She recovered.

Two boys in the Grizanti family, Cosmo, 14 years, and Joseph, 18 years, had attacks of vomiting on December 28, about 3 P.M., but no other symptoms.

It was impossible to secure any of the food eaten at this dinner, as it had been thrown out for the chickens. Two cans of beans put up at the same time as those served at the dinner were obtained, and sent to the New York State Laboratory for examination. The report on them was negative.

The Dina family found a can from which beans were served and had not been washed. This was examined by Dr. W. E. Cary of the University of Chicago, who has reported as follows:

> There was not sufficient toxin in the washings from the empty can which we obtained to kill any of our animals by direct feeding. However, after culturing the washings on beef heart media, we secured a very potent toxin which has killed guinea pigs in dilutions of 1:100 when fed by mouth. The pigs controlled with Type A antitoxin did not die, which indicates fairly clearly that there were spores of Type A botulinus remaining in the washings of this can. . . .

That the beans were infected with the *B. botulinus* is further proved by a summary prepared by Dr. Laughlin. All who ate them even in small quantities were ill, and most died. One (Rosa Dina), who denied having eaten beans, was ill with typical symptoms, but recovered. Those who did not eat beans escaped illness. With one exception, none of the patients showed evidence of mental dullness, or rise of temperature. All of them had rapid pulse.

Study of Effect of Environment on Quality of School Work—Germany

IN an effort to ascertain the effect of home environment on school work, a study of more than 800 public school boys and girls, ranging in age from 11 to 14 years, has been made in two cities of Germany. The quality of the child's work was judged by his advancement in school; no intelligence nor other tests were given. Only children of families with a moderate or low income, in which both parents were living, were included in the study.

The investigator found that the lower the economic standing of the family, the poorer the child's school work. For instance, of the children of unskilled workers about 50 per cent were retarded in the lower grades, the proportion being even greater for those in the higher grades. These conditions are attributed by the author largely to faulty hygiene, disease, and physical weakness, which are more prevalent among the poorer families, and partly to inherited lack of ability.—*Ztsch. f. Kinderforsch.*, Berlin, 35, 1: 7, 1929.

Measurements of Efficiency and Adequacy of Rural Health Service*

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and JOSEPH W. MOUNTIN, M. D.

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THE efficiency and adequacy of a local health service is or should be the concern of four groups: the people receiving the service, the taxpayers who shoulder the burden, the local workers rendering the service, and the state and national health agencies promoting or supervising the local service. To these groups may be added a fifth, the detached students of administration whose critical judgment is of great value. The determination of efficiency and adequacy is more than the application of a performance test. Many criterions must be taken into consideration, the principal of which are: nature and extent of the problem, character of program, service rendered, and in so far as can be measured the results attained.

No program can be considered either sound or satisfactory unless it is based on the needs of the area. Certain problems are more or less common to all areas, among which may be mentioned sanitation, control of communicable disease, and child health; yet the nature and extent of work necessary to handle these satisfactorily varies with the community. Malaria, hookworm, trachoma, industrial diseases and hazards, and the like, may be problems. In the beginning the administrator may obtain sufficient general information to define his problem through a study of morbidity and mortality data coupled with a hasty field survey. Later more detailed information concerning individual citizens and premises should be obtained. Throughout the succeeding years, an analysis of suitability of program to the problems should be made, but it should be based on records compiled by the health organization, from which should be determined not only the actual health status of the area, but also the effectiveness of the methods employed.

Next in importance to an analysis of the problem is the projection

* Read before the Health Officers Section of the American Public Health Association at the Fifty-seventh Annual Meeting at Chicago, Ill., October 18, 1928

of a program designed to effect its solution. All too often, health departments merely meet situations as they arise or carry on stereotyped programs handed down from predecessors. A high degree of efficiency cannot be attained except when following a charted course. At the present time, scarcely a single rural health organization is sufficiently manned and financed to carry out a complete and balanced program. Other factors enter: certain functions are defined by law and must be performed irrespective of worth until the law can be changed; epidemics and disasters will arise necessitating concentration along certain lines.

In general, the factors guiding program planning should be: the relative need for a given amount or type of service; the ease with which results may be attained; and the greatest good for the greatest number. Sight should not be lost of important factors in public relations such as: popular demand, desire for local service, and the creation of a feeling that the situation is being handled. A bit of the dramatic will lend color, and a paramount issue will stimulate interest. No attempt, however, should be made to enter a field unless a reasonable concentration of service can be attained, since dilution of effort beyond a certain point amounts to nullification.

RECORDS AND REPORTS

It is upon records and reports that measurements in detail must be based, and the importance of this subject warrants considerable discussion. However troublesome these records and reports may seem, there is no justification for neglecting either. Systems now in vogue are burdensome because of detail which serves no useful purpose. One system is usually copied from another, and the chief concern seems to be what might be included rather than what might be omitted. Yet despite this plagiarism, differences exist which render difficult or impossible the compilation of comparable data necessary for analysis and study.

The influence of the hospital and dispensary can be seen in all forms used by welfare stations; field nursing records bear the stamp of the visiting nurse; and communicable disease forms have been handed down by the epidemiologist concerned with investigation rather than control. Reports are even more troublesome than records, since the rural health organization as well as individual workers within the organization are required, as a rule, to render reports to several agencies. Each agency participating in local health work has a special form and no other will satisfy its purpose. This confusion will continue until records and reports find a common origin in

sound public health administration. There are four elements in a complete system of records and reports: (1) basic case records, (2) daily record of activities of individual workers, (3) periodic summary of progress, and (4) annual analysis.

The purpose of the case record is to provide space for entering data which may assist in handling a given case or situation, or which may have value for statistics or study. If this purpose is adhered to rigidly, the form becomes remarkably simple and analysis of the data presented does not become insurmountably difficult. The daily record kept by the individual workers should be merely a record of service and only a key to the basic case record where more detailed description of the service can be found. By the use of a code for the several services, the same form may be used by the different workers. Any complicated system is doomed to failure, and unless entries are made in the field when the work is performed, the data are certain to be inaccurate. The periodic summary should be brief, based on a sampling of activities. It has a twofold purpose: a check on progress, and a concise report of service rendered. Beyond this, it should not go. Any attempt to gain a complete picture by a monthly cross-section is futile. Here, too, the guiding principle should be, what can be omitted rather than what might be included. Its brevity need not be a cause for worry if the right type of annual report is used, and if its form is made known to the local health officer in advance. The annual analysis should constitute the main report of the organization. It should be complete and searching, giving a picture of the problem, the service rendered, the results accomplished, and the money spent.

The question arises as to what should be the common origin of reports and records. It has been stated in this paper that the origin should be sound public health administration. *The Appraisal Form for Rural Health Work* developed recently by a sub-committee of the Committee on Administrative Practice of the American Public Health Association more nearly represents public health opinion than any available document. The corollary, then, is that records be built around the *Appraisal Form*.

APPRAISAL

Appraisal, used in the sense of estimating quantity, quality or value of service, is practiced by interested persons wherever the service is established. Most frequently, it is based on personal opinion, a few going a step further and comparing the work of one area with that of another, or present conditions with past. The assignment of numerical values to various items has been used for many years in

the field of sanitation. More recently this principle has been applied to other health services.

The *Appraisal Form for Rural Health Work* is an attempt to combine the experience of workers in this field. However, any method of appraisal has very definite limitations and there is always the danger that it may become an end in itself rather than a means to the end. Its primary purpose is to measure service rendered; secondarily, its standards of performance may be used as a working plan, but only in so far as the administrator may choose to be guided by the judgment of others should he allow any method of appraisal to shape his program.

Since we possess rather meager information concerning the interrelation of problems and practices under different circumstances, each specific activity or accomplishment must be appraised separately, and possibly with a standard applicable to the particular item in question, but not to any other service or result. Thus satisfactory and correct measurement will be possible only when the rural health problem has been analyzed before projection of the program, when projection of program has been undertaken with certain itemized goals in view, and when records of services and results have been kept in such a manner that the data required for measurement of efficiency or adequacy of service will present in detail how much progress has been made toward the goals previously set up.

ADEQUACY AND EFFICIENCY OF PERSONNEL

In connection with measurements of health service, it should be borne in mind that an organization may be rendering adequate service and yet not be efficient, or the converse. Two entirely different qualities are being rated, and these should, but do not necessarily bear direct relationship to each other. In the A. P. H. A. *Appraisal Form*, for instance, the type and volume of service rendered to the community is the basis of measurement from which a score is determined. In other words, the present form sets forth the kind and amount of service which should be rendered but throws no light on personnel and budget requirements. Those concerned with administration frequently wish to know what personnel is required for the performance of a given amount of service. This information is needed when projecting a budget or a program or when attempting to appraise the work of an individual. Without this information the appraiser cannot definitely state whether a community is receiving full value for the money expended, or, what is more important, whether a low score is due to the inefficient health organization or to the niggardliness of the commu-

nity. At present, no data on performance of individuals working under a wide range of rural conditions are available. Under the circumstances, no statement, nor even a guess, can be hazarded concerning adequacy of personnel or budget or method of measuring the efficiency of individual workers or the organization as a whole.

GENERAL CONSIDERATIONS

Originally, rural health service was a city institution incorporated into an entirely different structure. Programs, policies and criterions are a carry-over. Up to the present time, very little carefully checked data on rural health conditions as affected by health service have been assembled. The meager information available is mostly of the cross-section type and coincidental circumstances are grasped as supporting arguments. There remain to be determined what the results are and how they can be attained.

In spite of its weakness, service rendered forms the basis of most of our appraisal efforts. The measurement of such services will yield true indexes of adequacy and efficiency in proportion to the soundness of the assumption that the prosecution of a particular activity will bring about a particular result. Certainly such appraisal is valuable; certainly a study of service rendered will determine whether or not an organization is engaging in a balanced program according to a somewhat empirical pattern, but endorsed by the unhurried judgment of competent observers. It would be unsafe, however, to allow measurement to depend entirely upon appraisal of service rendered. Possibly, on an annual basis, such measurement is the most satisfactory index of potential accomplishment, but on the other hand, it should be supplemented by studies of such morbidity and mortality rates and trends as may be proved to be safe indexes.

The very nature of the general subject indicates that no satisfactory system of measurement of adequacy and efficiency will, or should be built up as a suddenly completed instrument. What and how to measure will become better understood as real scientific data are accumulated. It must be admitted, also, that in every health program there are certain intangible services and results not amenable to weighing and measuring, but this is no reason for discouragement. Measure and evaluate whatever is amenable to such treatment and it is entirely possible that the measurable factors may be found to bear a rather constant relation to those now considered unmeasurable.

No attempt has been made to set up any new method of evaluation of health service. Rather, this has been a discussion of difficulties and possibilities which seem to be inherent in present units of measure and

factors measured. There is nothing in this treatment of the subject that would warrant conclusions, but the following summary may be significant.

SUMMARY

1. It does not seem practicable at this time to determine or measure all of the indexes of efficiency and adequacy of rural health service.

2. It does seem practicable and desirable to determine and measure such indexes as are amenable to this treatment.

3. An index of accomplishment must represent a specific item where cause and effect may be specifically demonstrated.

4. There appears to be need for accumulation of scientific data substantiating assumption that the prosecution of a given activity will be followed by a specific result.

5. There appears to be need for determination of what mortality and morbidity rates or trends may be accepted as indexes of accomplishment, and what population unit, or number of years' experience, shall be considered as essential for credit of such rates or trends.

6. There appears to be need for determination of specific standards of efficiency for various personnel employed.

7. Measurement of rural health service should be based upon a study of efficiency of personnel, adequacy of service and results obtained.

A Few More Recent Arguments in Favor of Pasteurization

Washington, N. J.—Two hundred and two cases of scarlet fever due to raw milk, 192 of which occurred within 6 days—May 26–31, 1927.

Plymouth, Mass.—One hundred and twenty-seven cases of scarlet fever, 101 of which were primary, occurring on one milk route which supplied raw milk to approximately 250 families. For 5 years previous to this outbreak in a population of some 13,000, the yearly average of scarlet fever had been 12 cases.

Wayland, N. Y.—One hundred and forty-one known cases of septic sore throat, including the proprietors of the dairy—husband and wife. Forty employees in one factory were off duty. Practically all of the victims became ill within 3 days—February 16–18, 1928.

Savannah, N. Y.—Seventy-five cases of septic sore throat, all falling ill within 8 days—March 10–18, 1928.

Lee, Mass.—Nine hundred and fifty cases of septic sore throat, occurring within 2 weeks, with 48 deaths.

Do we need further argument to show the importance of pasteurization?

Some Unsolved Child Labor Problems*

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As long as there is child labor, there will be child labor problems—special problems that do not apply in the case of adult workers—that arise from the physical weakness of children, their immaturity, their ignorance, and their helplessness.

One of these problems is the protection of children employed in industrialized forms of agriculture, and this is by no means confined to migratory workers. It is a difficult matter to deal with because of the popular conception that such work is confined to useful tasks on the home farm, doing chores for a neighbor, or earning a few pennies picking berries.

It is not such tasks which constitute the problem. It is where numbers of children are brought together to work under virtually industrial conditions, with foremen or overseers in charge, that the serious problem is created.

Of the thousands of children under 14 and under 16 years of age listed in the federal census as employed in agriculture, a considerable proportion—in some states, such as Massachusetts, the majority—are recorded as employed on other than the home farms. Many of them are working doubtless in the gardens of the Imperial Valley, on the beet fields of the middle west, on the truck farms of the Atlantic coast, and on the tobacco plantations of the southern states and New England.

Although this work is frequently carried on under conditions that at least approximate those in the factory, there is practically no regulation. Some of the states specifically exclude farm labor from the application of the labor laws, thus leaving children as well as adult workers largely without protection.

The failure of most of the state child labor laws to deal with the situation is in part due to the fact that many of these laws were enacted before the employment of children in certain forms of agriculture had developed on an industrial scale.

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*Abstract of address given at the Convention of the Association of Governmental Labor Officials of the United States and Canada, New Orleans, La., May 23, 1928.

Massachusetts has, in general, high standards for working children. Yet aside from the school attendance laws, there is little protection afforded to the children who work on the onion and tobacco plantations in the western part of the state. There is not even a record of the numbers employed, as the work is carried on mainly during the summer months when the schools are not in session. The youngest children do not even have to be certified for this work.

People in a position to know have estimated that during the height of the season, several thousand children—boys and girls under 16 years of age—are employed on the plantations; and that the majority of these workers are under 14 years of age. As many as 100 are sometimes employed on a single plantation.

There is practically no regulation of working conditions; no limitation of the hours, other than the night work limits for all children under 14 (prohibition of employment before 6:30 A.M. and after 6:00 P.M.); and there is no age limit. Young children are desired for the work on the shade grown tobacco, to pick the lower leaves that grow close to the ground.

It is very hot and sultry under the tents during the months of July and August. There have been instances reported where horses working under the tents have died as a result of the excessive heat. That suggests what the conditions may mean in the case of young children, and there have been stories of children overcome by the heat and humidity.

There are, from time to time, reports from people in the vicinity of the plantations of moral hazards in this work, of bad working conditions, long hours, and sometimes of harsh treatment by the overseers. In the absence of definite regulations it is not possible to say to what extent such conditions, and others injurious to children, may exist.

There are difficulties in the way of securing legislative regulation of child labor in agriculture. It should not be impossible, however, to frame legislation which will permit regulating the employment of children in forms of agriculture which have become industrialized, and to check abuses wherever found, without interfering with the legitimate work of boys and girls on their parents' farms.

Safeguarding the health of children entering or already in industry is a matter which deserves more attention than it has yet received. Although the majority of the states have some provision for health certification for young children before they are permitted to enter employment, a number make no provision. In the case of some of those that do, the requirement for an examination is optional with the official who issues the permits.

Massachusetts is listed as one of the states where the requirement is mandatory. There is, however, a loophole in the health certification law which very greatly impairs its effectiveness. The law provides that every child between 14 and 16 years of age who wishes to go to work must present a health certificate from a physician who certifies that he has thoroughly examined the child and found him in sufficiently sound health and physically able to perform the work for which he is applying.

It was intended that this examination should be made by the school physician. By slipping in the words " or family," it was left for any physician to make the examination and issue the health certificate. In its operation, " family physician " means any physician who will sign the certificate, the result being that if a child is refused a certificate by one he has simply to go to another, until he finds one who will sign. The protection intended by the law is thus largely destroyed.

In some of the cities of that state, the work is assigned to one of the school physicians appointed for this purpose and is conscientiously performed. In other places, however, there is little attention given to it; and the admission is frankly made that the work is not being properly done.

A recent check-up made for a private agency, covering a representative group of cities and towns, showed that in many localities the work is superficially done; that in many places there is no standard for the examination; and that practically no children are rejected as physically unfit.

Many who are interested in the protection of children would like to see the responsibility for this work placed definitely with the school officials as originally planned. They would also like to see a properly qualified physician put in charge, given an adequate salary, and allowed time to visit industrial establishments to learn about the occupations in which children are employed.

The health certification of children entering industry has a direct bearing upon their health after they have gone to work. Aside from the provisions of the statutes of some of the states excluding children under certain ages from specified occupations presenting definite health hazards, little attention is given to the health of children once they have become wage earners.

There is need for more studies dealing with the health of working children, the effect of industry upon young children, and the effect of certain kinds of employment, so that there may be intelligent revision of the lists of those prohibited, in order to cover new hazards that have arisen since the original lists were adopted. Such studies should help

to indicate the kinds of employment that are safe, and the kinds from which children with certain physical defects should be excluded. They should tie up with the health certification for children entering industry and show how that important initial work can be strengthened and improved.

Prevention of accidents to employed children, and to all industrial workers, has received more attention than the other problems mentioned. A good deal has been accomplished, but much remains to be done. As long as boys and girls are maimed in industry, and young lives are sacrificed, the problem is not being met.

The Massachusetts child labor laws make careful provision to exclude children from industrial hazards. Prohibition against employments involving accident hazards extend to boys and girls up to 18 years of age. The Massachusetts State Department of Labor and Industries is given authority to add to the lists of prohibited employments for minors under 18 and under 16 years of age; and to exclude minors from any specific machine where there appears to be an accident hazard. This authority to act in individual instances is utilized from time to time. The general authority, however, to add to the list of prohibited processes has never been used by the present department; and only in 3 instances was it used by the former State Board of Labor and Industries.

Although the list of prohibited employments for children under 16 years of age is fairly comprehensive, and includes something like 20 different kinds of machine work, boys and girls below this age are still permitted to work " in connection with " some very dangerous machines. One of these is the spinning mule. Boys of 14 and 15 are frequently employed as back boys on the mules. Sometimes very serious, even fatal accidents occur. There was one very terrible accident where a boy of 14 was caught between the heavy steel carriage and the breast beam and crushed to death. Another boy of the same age in a similar accident escaped with a badly broken leg. An older boy, cleaning the machine while it was in operation, was caught and his head crushed. Still another, winding the sticks while the carriage was running, received a double fracture of the jaw and lacerations of the head and face.

One of the most dangerous machines in industry, as far as children are concerned, is the freight elevator. Most of the fatal accidents to boys under 16 years of age in Massachusetts industries occur " in connection with " freight elevators. The majority of the non-fatal elevator accidents to minors involve boys under 16.

Of 121 elevator accidents to minors investigated by the present

Department of Labor and Industries, 68 were sustained by children under 16, and of 23 fatal elevator accidents, 14 occurred to boys under 16. Of 6 fatal accidents to children under 16, investigated by the department in 1926, 2 were " in connection with " freight elevators. In one case a boy of 13, illegally employed in an industrial establishment, was crushed to death.

It should be noted that the Massachusetts law prohibits the employment of minors under 16 years of age " in operating, cleaning or repairing freight elevators." It does not, however, prohibit the employment of such minors " in, on, about, or in connection with " freight elevators, and it is in work that comes under this classification that most of the accidents occur.

A few states are trying to prevent, or at least reduce, industrial accidents to children by requiring extra compensation in the case of those injured when illegally employed, making this a direct penalty upon the employer against which he is not permitted to insure. The majority, however, have no such provision. Some even specifically exclude from their compensation laws those injured in the course of illegal employment. In Massachusetts, the question whether illegal employment is covered by the compensation laws has not been decided by the courts.* In the absence of a court opinion, the Department of Industrial Accidents grants the award.

The Massachusetts law makes no specific provision for an additional award in the case of injuries to children arising out of illegal employment. There is a provision to permit an extra award in the case of accident, whether to adult or minor, due to the wilful misconduct of the employer or his agent. In only a few instances has such an award been made, and in view of a court opinion it is of little practical value.

All of the problems mentioned present difficulties, but they are not insuperable. It is not unreasonable to look ahead to the time when legislative protection shall be given as a matter of course to all child workers regardless of the nature of their employment; when child labor in agriculture, as well as in factories, will be covered by regulations requiring fair working conditions; when adequate provision will be made through enforceable regulations to safeguard the health of children going into industry, and after they are in; when laws that were excellent at the time of their passage, but have gotten behind the times, will be revised to meet changing industrial conditions.

* An opinion of the Supreme Judicial Court of Massachusetts, May 29, 1929, apparently establishes the right of compensation in case of injury arising out of illegal employment.

Iodine in Water, Food and Urine

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MUCH has been written of late years in America concerning iodine in water, and its introduction into public water supplies which are deficient has been strongly advocated by some as a public health measure. Certain cities and towns have, moreover, adopted this procedure in an attempt to prevent or minimize thyroid troubles. During 1925 and 1926 the iodine in about 100 of the public water supplies of Massachusetts was determined and found to vary from none to 6.33 parts per billion. These results were given quite fully in the reports of the Department of Public Health of Massachusetts for 1925 and 1926. A more complete study of iodine in Massachusetts waters and elsewhere was given in a paper by H. W. Clark.[1]

In all this work attention has been called to the fact that we are not dependent upon water for iodine, as many vegetables and grains contain it in large amounts, and sea fish, especially certain species, are great carriers of iodine, as are marine growths, seaweeds, mosses, etc. Certain determinations of iodine in food have been made by the authors and by others. Some of this work has been summarized by the Bureau of Fisheries of the U. S. Department of Commerce in its bulletins. Among the many determinations of iodine in food made at the Lawrence Experiment Station may be given those shown in Table I.

TABLE I

IODINE CONTENT

	Iodine Parts per Billion		
Soft-shell clams	1,012	1,152	—
Quahaugs	197	130	205
Flour	16	9	—
Fresh codfish	1,056	946	—
Milk	17	—	—

It will be noticed how large the iodine content of these foods is compared with that of the Massachusetts water containing the greatest amount, namely, 6.33 p.p.b. As all these results made it evident that water furnishes only a small part of the iodine required by the human

body, it was decided to make some determinations of the excretion of iodine in order to show the comparative amounts taken in through water and the amounts excreted.

During 1928, 48 analyses were made of the urine of different individuals. The highest amount of iodine found was 210 p.p.b. and the lowest 5 p.p.b., the average being 41, or more than 6 times that found in the richest iodine-bearing water of the state. It was also found that there was a great variation in the amount of iodine in samples from different individuals, some giving uniformly higher results than others. It was also noticed that the amount of iodine was lower during warm weather. The average amount in the urine from 7 persons during April, May, October and November was 66 p.p.b., during June, July, August and September, 28 p.p.b. The low summer results are probably due to greater consumption of water at this season and dilution of the iodine taken in with food.

From the results of this work it is evident, in Massachusetts at least, that only a small percentage of the iodine entering and passing through the human system is obtained from water, and it is probable that the introduction of iodine into water supplies is more or less futile compared with selecting or preparing food, salt, etc., so that an amount of iodine sufficient for the needs of the body is taken in.

The method used by us for determining iodine in water has been given in the reports and article referred to. When this work was begun, however, it was found that there was no adequate or reliable method for the determination of iodine in urine; hence the following was developed at the Lawrence Experiment Station:

All organic matter must be destroyed, and owing to the large amount in urine the determination of iodine is much more difficult than in a sample of water. The usual method of burning the organic matter with oxygen presented so many difficulties that a different procedure was tried:

After evaporating 2,500 to 4,000 c.c. of urine with 10 gm. of caustic soda to the consistency of a thick syrup, it was transferred to a small iron pan, about 20 gm. more of caustic soda added, and the mixture heated slowly until fumes ceased to come off. This destroyed most of the organic matter at a comparatively low temperature. The resulting black clinker was ground in a laboratory hand mill and allowed to stand over night in a beaker with about 200 c.c. of alcohol to extract the iodides; the alcohol was then decanted through a filter, the residue washed by decantation several times with alcohol, finally placed upon the filter and again thoroughly washed with alcohol. A large part of the alcohol of the filtrate was then distilled off, the residue evaporated

nearly to dryness with 3 gm. of caustic soda in a nickel dish, the dish then heated slowly until the organic matter extracted was broken up, the volatile portion driven off and the remainder present as free carbon. The fusion was then dissolved, filtered, evaporated to a small volume, and a drop or two of approximately 1/10 normal arsenious acid added to reduce the iodates. The solution was then acidified with sulphuric acid, transferred to a separatory funnel and a few drops of strong sulphuric acid saturated with sodium nitrite added to liberate any iodine present. The iodine was then extracted with purified carbon tetrachloride and the amount present determined by comparison with a standard solution of iodine in carbon tetrachloride in a Dubosq colorimeter.

This procedure gave check results on duplicate samples and showed an average recovery of 75 per cent on known amounts of potassium iodide added to urine and carried through the regular procedure. This may appear to be a low recovery but it must be understood that the amount of iodine in the average urine analysis was only about 0.02 mg. or 0.00002 gm.

REFERENCE

1. Clark, H. W. Iodine in the Public Water Supplies of Massachusetts, *J. New England Water Works Assn.*, 42: 204 (June), 1928.

Where Automobile Accidents Occur

AN interesting study of fatal automobile accidents in New York State has just been published by J. V. De Porte, Director of Vital Statistics in the New York State Department of Health. This shows that in 1927 out of a total of 2,555 deaths due to this cause, 1,091 occurred in the City of New York, and 1,464 in the rest of the state. Expressed in rates per 100,000 of population this shows 18.3 per 100,000 killed in the city and 26.6 in the rest of the state. In order to visualize the magnitude of these rates it may be well to compare them with the death rates from some of the commoner causes of death in this city. Thus during the past ten years:

Deaths from Typhoid Fever—have averaged	2	per	100,000
Deaths from Measles — " "	7	"	100,000
Deaths from Scarlet Fever — " "	2.5	"	100,000
Deaths from Diphtheria — " "	13.6	"	100,000

Of the 1,464 deaths, 655 occurred in urban districts and 809 in rural districts.

These are surprising figures. It is probable that much of the high fatality in rural districts is due to excessive speed and carelessness engendered by the feeling that driving in the open country is free from danger. The figures here presented should serve as a warning, and should lead drivers to exercise the same caution in driving in the country that they do when worming their way through crowded city streets.—*Weekly Bull.*, City of New York Dept. of Health, June 8, 1929.

Disposal of Phenol Wastes from By-Product Coke Plants*

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THE growth of the by-product coke industry in the United States has been phenomenal. Fifteen years ago, 75 per cent of all the coke was manufactured by the old beehive oven method in which the by-products were entirely wasted. During the first 6 months of 1928, 90 per cent of the coke in this country was made in by-product ovens. In 1913, about 17,000,000 tons of coal were coked in by-product ovens in the United States. Then came the war, in which the vital necessity of coal by-products for national defense was so forcibly demonstrated and so quickly and actively recognized that in 1918, 37,000,000 tons of coal (more than double the annual amount just before the war) were coked in by-product ovens.

We have the largest by-product oven installation in the world at the plant of the Carnegie Steel Company at Clairton, Pa., coking about 10,500,000 tons of coal per year, or nearly as much as the total of all the by-product coke plants of the United States 15 years ago. The annual capacity of all the by-product coke ovens in this country is more than 85,000,000 net tons of coal.

The growth of this great, new national industry has had very little public notice. It is principally a servant of the iron and steel industry and the gas industry. Its products reach the public through secondary and tertiary agencies such as gas companies, coke dealers, chemical and pharmaceutical works, fertilizer manufacturers, motor fuel distributors, tar product companies and a great variety of others. Most of the manufactured gas used in the United States is produced either directly from by-product coke ovens or from coke made in these ovens.

THE PHENOL PROBLEM

The phenol problem as it exists today, and in so far as it may be caused by by-product coke plant wastes, has been created largely by the rapid growth of the industry and by the introduction of the chlorination of public water supplies.

* Excerpts from paper read before the Public Health Engineering Section of the American Public Health Association at the Fifty-seventh Annual Meeting at Chicago, Ill., October 18, 1928.

The first by-product coke plants that had to deal with the phenol problem were owned by iron and steel companies and produced substantially all of their coke for blast furnace purposes. Such plants could and did adopt the expedient of using the phenol wastes to quench the coke. The solution of the problem became much more difficult with the rapid introduction of plants for making domestic coke, for which the practice of quenching with phenol wastes is not feasible.

In considering the phenol problem as it exists today, from the standpoint of the by-product coke industry, it is important to consider the following points:

1. Although the individual plants are rather widely dispersed, most of them are so located as to affect three important drainage areas; thus, 35 per cent of the by-product coking capacity of the United States is located on the Ohio River drainage area; 16 per cent is located around the lower end of Lake Michigan; while 16 per cent drains into Lake Erie, chiefly near Cleveland and Buffalo.

2. Some other solution besides coke quenching must be found to solve the problem for those plants which sell their coke for domestic purposes.

It should be stated at this point that there is every reason to believe that the phenol problem has been solved so far as giving ample protection to the communities in the Ohio River drainage area is concerned. The solution, so far as this district is concerned, has been found almost entirely in the coke quenching method. Although this remedy has secured adequate protection to the public, it is not regarded as satisfactory so far as the industry is concerned, and a great deal of work has been done, and a great deal of money has been and is being spent to find some better method which will protect the public and which will have fewer technical disadvantages.

The extraordinary difficulty* of the phenol problem is proved by the enormous amount of work that has been done on it not only in the United States, but in England, Germany, and other countries. The problem is of serious concern in the crowded industrial districts of western Germany, and visits have been made to this country by many German engineers for the purpose of inspecting the methods that have been developed here. The present situation in America may be summed up by saying that public water supplies can now be adequately safeguarded by certain methods that have been developed. Although much remains to be done toward improving these methods and lowering their cost of application, there is every reason to believe that the problem will shortly be regarded as solved, not only from the standpoint of the public, but from the standpoint of the industry. All pos-

* This difficulty is emphasized in recent German technical literature on the subject. (See D. H. Wiegman, *Glückauf*, Mar. 31, 1928, p. 397.)

sible credit should be given to the very fine spirit of coöperation that has been displayed by the health departments of the different states affected. This coöperation has been responsible for the very rapid progress that has been made—a progress much more rapid than is generally realized and which would be greatly hampered in the absence of such coöperation.

OCCURRENCE OF PHENOL IN BY-PRODUCT COKE PLANT WASTES

In speaking of phenols from the standpoint of waste disposal, we refer to all chemical substances which give the so-called phenolic taste in chlorinated water. Thus, we mean not only phenol itself (C_6H_5OH) and the cresols and bodies of similar character, but also benzol and derivatives of benzol. All of these substances occur primarily in the gas and tar evolved when coal is coked in a by-product oven. Any water which comes in contact with such gas or tar will dissolve out a little of the phenols, and any water which comes in contact with the benzols in the benzol recovery apparatus will carry away enough of these to be objectionable. The sources of the phenols in by-product coke plant wastes are therefore as follows:

1. The gas liquor or weak ammonia liquor which has been condensed or scrubbed out of the gas in contact with tarry matter
2. The so-called final cooler water or water into which the gas has been brought directly in contact for cooling purposes
3. Steam condensate from the distillation apparatus in the benzol recovery plant and other water which has come in contact with benzol
4. Miscellaneous spillages and floor and ground drainage

ECONOMIC CONSIDERATIONS

There is apt to be very serious misconception as to the possible income that can be derived from the recovery of phenols from ammonia still waste. Many non-technical people, interested, as all of us should be, in the subject of stream pollution and having heard of the great values that have been found by some packing houses in the working up of what was formerly refuse, or by some chemical company in developing what was formerly a waste product, have hastily assumed that the same possibility applies to any plant waste.

Now the fact is that one of the serious difficulties of the problem is the very small quantity of phenols that can be recovered. With a phenol content of a little over 2 gm. per lit. of still waste, there will be about 0.5 lb. of phenols in the waste produced from one ton of coal. Most of the by-product coke plants that have to deal with this problem are of moderate size. The Clairton plant of the Carnegie Steel Company is in a class by itself and there are only a few plants handling

more than 3,000 tons of coal per day. The majority of by-product coke plants handle much less than this—1,000 tons per day would be a fairly typical figure. Such a plant would produce about 500 lb. of phenol per day in the ammonia still waste. The value of this is problematical. It should be remembered that it is crude phenol and would require certain refining to make it suitable for most purposes. Four cents per pound might be considered a possible value. At this price, if all the phenols in the still waste from a 1,000 ton plant could be recovered, they would have a value of $20 per day. This is a very slender margin for the operation of any process. The majority of by-product coke plants would be well satisfied if the income from any phenol recovery process would just balance the costs.

METHODS OF PHENOL RECOVERY OR ELIMINATION

A vast amount of experimental work has been done with the object of extracting and recovering the phenols in the gas liquor or ammonia still waste, or of eliminating or destroying it. In our laboratories, the reactions of the phenols with literally hundreds of substances have been examined under various conditions. There is always the possibility that some practical process may be discovered for the removal of the phenols by chemical reaction, but at present the most successful and the most promising processes are based on the employment of physical or biological means.

The processes which have reached large-scale operation may be classified as follows:

1. Disposal by Complete Evaporation:
   a. Evaporation of gas liquor
   b. Evaporation of still waste
      i. On hot coke
      ii. On blast furnace slag
2. Preheating Ammonia Liquor Entering the Ammonia Still
3. Extraction of Phenols with Solvents:
   a. Treatment of ammonia liquor with solvents
   b. Treatment of ammonia still waste with solvents
4. Removal of Phenols with Solid Adsorbents
5. Biological Treatment:
   a. By mixing with sanitary sewage
      i. Untreated sewage
      ii. Activated sludge process
      iii. Imhoff tank process
   b. Treatment on inoculated filters

In most cases, the plants producing phenol wastes are not conveniently located with respect to sewage disposal systems; but the bacterial method of phenol elimination may still be employed by re-

course to the so-called bacterial filters. These consist of beds of porous material—usually coke—inoculated with the phenol destroying bacteria by admixture with manure, sewage, activated sludge, Imhoff tank sludge, etc. The ammonia still waste must be clarified and diluted to such an extent that the bacterial action will not be inhibited or destroyed. A freshly inoculated bed appears to be quite sensitive to an excess of still waste; later, in some manner, the bacteria become more resistant toward the phenols and the proportion of still waste may be increased. The diluted still waste is sprinkled over the surface of the filters and percolates through the inoculated mass, which is preferably aerated.

The pioneer investigations of the treatment of ammonia still waste on bacterial filters were made by E. Frankland and H. Silvester[1] about 24 years ago. They studied the sewage disposal system of Oldbury, England, which consisted of large contact bacteria beds handling city sewage, with which was mixed as much as 9 per cent of ammonia still waste. Later, experimental bacterial filters were installed in England, Germany and America, for the direct purpose of ammonia still waste disposal. The Bradford Road Gas Works, Manchester, England, began using the bacterial filter for this purpose in 1908, and continued the practice for at least 6 years with apparent success, although in 1923 the process was still considered in the experimental stage in England, as shown by the extensive discussion in the *1923 Report of the Alkali Works Inspectors.*

Important work in the application of bacterial filters was done by Ralph L. Brown of The Koppers Company's Research Laboratories.[2] Brown found it desirable to mix humous material, such as peat, with the coke packing, and introduced the mechanical aeration of the filter bed. Instead of employing fresh water for dilution, he recirculated a requisite amount of the treated waste for this purpose. This recirculation is valuable in conserving the bacteria which otherwise would pass out of the system with the diluted waste. With this dilution by recirculation, the beds can be operated practically continuously, one apparatus on a laboratory scale functioning continuously for a year without change.

Present opinion in regard to the application of the bacterial filter under average American conditions is that it is too expensive in comparison with other methods for the elimination of the bulk of the phenols from ammonia still waste. It requires a large ground area (according to Brown, one cu. yd. of filter bed will handle 10 to 20 gal. of ammonia still waste per 24 hours) and the expense of installation is considerable. No bacterial filters have yet been installed on a large

scale in this country, and a single modern large-scale installation in the Emscher District in Germany has been found very expensive to operate. Experts, both in this country and in Germany, believe that the bacterial filter will find application in those cases where the bulk of the phenol is removed by some other method, where conditions make it absolutely necessary to eliminate the last traces of phenol, and where no sewage disposal plant is available for this purpose.

A process has recently been developed by The Koppers Company for the removal and recovery of the bulk of the phenols from the ammonia liquor in connection with the operation of the ammonia still. This is accomplished by taking the hot liquor from the bottom of the free section of the still and pumping this liquor over a scrubber through which a mixture of steam with air or other gas is circulated. The phenols pass into the hot gas and steam while the liquor runs back to the lime leg of the still. The mixture of gas and steam carrying the phenols is then treated in a second scrubber with a solution of caustic soda, which removes the phenols as sodium phenolates. The gas and steam mixture is then recirculated by means of a fan back to the first scrubber. The sodium phenolate is withdrawn from the second scrubber and treated in the usual manner for the recovery of the phenols.

This process, on a large experimental scale, has shown very high efficiency in the removal of the phenols; and in regular operation, over 95 per cent of the phenols are being eliminated. Two large plants are being constructed, one of which is just about to be put in operation at the present writing.

SUMMARY OF PRESENT STATUS OF PHENOL REMOVAL

The writer's personal view as to the application of the various methods that have been developed for the disposal of phenol wastes from by-product coke plants may be summarized as follows:

1. All phenol bearing wastes, with the exception of ammonia still waste, may be handled by installing suitable recirculating and intercepting systems so that no phenol from these sources need reach any public water supply.

2. The cheapest and most satisfactory method for ammonia still waste disposal consists in mixing the waste with ordinary city sewage, provided a sufficient amount of sewage is available.

   a. In cities having no sewage disposal systems, simple mixture with raw sewage will suffice to a certain extent, provided sufficient dilution or time of contact can be had. In these cases, it would be well to consider the installation of a sewage aeration system as this would greatly facilitate the destruction of the phenol.

   b. In cities using the activated sludge system of sewage disposal, a volume of still waste equivalent to 50 parts of phenols per million parts sewage

can be treated with certainty, and it is probable that a much larger proportion can be safely treated.

c. In cities equipped with Imhoff tank systems of sewage disposal, ammonia still waste properly clarified can be added either to the raw sewage or to the tank effluent; and if the effluent is suitably aerated, the phenols will be destroyed. We have not sufficient data as to the proportion of still waste that can be handled in this way, but it is probable that a proportion of 1 part still waste to 10 parts sewage may be safely handled, and Dr. Imhoff states that much higher proportions can be used.

3. Where the required amount of sewage is not available, the ammonia liquor should be treated for the removal of the bulk of the phenols; and this treatment should be followed, if necessary, by mixing the still waste, with its small remaining phenol content, with sewage, or treating it on bacterial filters. In most cases, the removal of the bulk of the phenol from the ammonia liquor will be sufficient without further treatment of the still waste.

4. The disposal of ammonia still waste by using it for coke quenching is available as an emergency method except for plants producing domestic coke; but although it offers adequate protection to water supplies, it is unsatisfactory for many technical reasons and will doubtless be superseded by other methods.

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Regulations Governing Public Swimming Pools

THE following regulations governing public swimming pools were adopted at the regular monthly meeting of the Maryland State Board of Health held at the headquarters of the State Department of Health in Baltimore, June 18. The regulations became effective at once. They apply to any swimming pool used for a period of 6 days or longer and accommodating at any one time 10 or more persons.

1. No swimming pool shall be operated without a permit from the State Board of Health, or such local health authority as the State Board of Health may designate. Application for such permit shall be made in writing, upon forms provided by the Department of Health or the properly constituted local authority, stating the exact location of the existing or proposed pool, the approximate number of persons whom it is to serve, the proposed source of water supply, the methods of pool water purification to be employed and the sanitary conveniences to be provided. The form in each instance must be filled in sufficiently to constitute a complete description of the pool and the method of its operation.

2. Before the construction of any natatorium or swimming pool is begun, the plans and specifications for such structure shall be submitted to the State Department of Health or the properly constituted local authority for approval and a permit. The acceptance of a permit shall be construed to indicate that the applicant has read and accepted such rules of operation and maintenance as have been formulated by the State Department of Health under this regulation.

3. All bathing places shall be open for inspection by authorized health officials at all times when the place is in operation.

4. Health officers shall have the power to order reasonable changes relative to improving the operation and sanitary conditions of swimming pools and their surroundings, and, if deemed necessary, to close a pool until the conditions are approved by the State Department of Health.

5. All pools must be supplied with water which meets the minimum requirements of the State Board of Health.

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FEDERAL HEALTH CORRELATION

A NEW bill for the coördination of federal health activities was introduced into the 71st Congress on May 20, 1929, by Representative James S. Parker; and a companion measure was introduced by Senator Jones in the Senate as S. 1195. This new bill differs somewhat from that passed by the last Congress and vetoed by President Coolidge, but is the same in its essential particulars.

The new Parker Bill (now H. R. 3142) would empower the Secretary of the Treasury, when requested, to detail officers or employees of the U. S. Public Health Service to coöperate in the health work of any executive department or independent establishment. It would also allow the Surgeon General to detail personnel to educational and research institutions and to extend the facilities of the Service to outside scientists. The establishment of additional divisions in the Hygienic Laboratory for this purpose is also authorized.

A commissioned status for sanitary engineers, dental officers, and other non-medical scientific personnel is provided—the alleged unconstitutional features of the former bill in this respect having been surmounted by vesting the appointment solely in the President, with the advice and consent of the Senate. The number of such appointments is, however, restricted to not more than 110.

The Surgeon General is given the same rank as the Surgeon General of the Army, and a new rank of medical director is created to correspond to that of Assistant Surgeon General, though the latter title would be continued for chiefs of divisions. Promotion would hereafter be the same as in the Army Medical Corps.

No provision is made in this bill, as was in the former one, for a Nurse Corps in the U. S. Public Health Service. Authorization for expansion of the Hygienic Laboratory has also been omitted, as that

is taken care of in another bill, H. R. 3143, introduced by Mr. Parker, for a National Institute of Health. This is the same as the Ransdell Bill of the last session, which passed the Senate. Mr. Ransdell has reïntroduced it in the Senate as S. 1171.

The new Parker Bill provides for enlargement of the present advisory board of the Hygienic Laboratory into a National Advisory Health Council, with five additional members appointed from the public health profession.

This is, of course, an excellent piece of legislation, as was the other bill which was adopted, but vetoed on the advice of the former Director of the Budget. Both the director and his chief are now out of office and the bill has good prospects of becoming a law. Sanitarians can aid in the repassing of this valuable measure by communicating to their senators and representatives their wishes that it pass.

THE PROBLEMS OF BOTULISM

THE occurrence of an outbreak of botulism is still capable of exciting general interest in the causative food and other factors incident thereto. The original report of the California Botulism Commission[1] is now a number of years old. The facts elicited by this commission do not appear to have been generally followed by home canners, since outbreaks continue to occur. These outbreaks are usually accompanied by a serious case mortality rate, and an effort to reduce these preventable fatalities should be immediately made. The preservation of food by heat, as well as the newer methods by cold, is a technical procedure of the first magnitude. The chemical reaction of the food, the consistency of the product, the size of the container, the original soundness of the material, the cleanliness of the packer, and, finally, the source of the bacterial contaminant with its thermal death time and point, cultural and growth possibilities with the production of poisonous substances, all play their part. Therefore, the preservation of food cannot be legislated into safety, but the general public can be educated to accept and use approved methods.

Fortunately, many universities, notably, Harvard, Stanford, Chicago and California, have interested themselves to the end that many facts have been ascertained and applied to canning. Apparently, the greatest benefactors of this unheralded but remarkable research have been the commercial canners of foods. This is shown in the absence during the past few years of outbreaks of botulism due to commercially canned products.

Recently, the *Journal of the American Medical Association*[2] very rightly sounded a note of warning to the home canners because of con-

tinued outbreaks in various parts of the United States. The methods to be adopted to make home canning safe are problems that should be met. There is now available enough information to make a start at least to do this, and official governmental and health agencies should at once adopt a program. This program should primarily be educational. There should not be issued general orders of one type only to have them withdrawn because of subsequently proved impracticability. There appears to be no doubt that certain food products are ordinarily safe from visible spoilage yet may be toxic. Again, there are foods whose acidity would preclude bacterial growth in the majority of instances. Likewise, there may be added to many foods certain inhibitory substances like salts or acids that retard the growth of spores like *B. botulinus*. It is advisable that a committee of qualified persons be appointed to study and report on the safety of the preservation of food, particularly as now practiced in the home, and to lay plans for its future safety.

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PROGRESS IN CANCER

WITHIN the last few years there has been a notable advance in our understanding of cancer—not that we are materially nearer a knowledge of the specific cause, if there be one, of that disease, if it be a disease; but there has been distinct progress in the recognition of cancer as a problem which must be attacked in a different way than has hitherto been thought necessary. Instead of being looked upon as a private matter between the patient and his physician, it is now regarded as a subject calling for community action.

Health departments no longer give attention to cancer merely as a detail of vital statistics and as a subject for occasional notice in their periodicals. Its inclusion in the *Appraisal Form*[1] means that from now on the adequacy of health programs will be judged in part by what is done in investigating the prevalence of cancer; in providing for the diagnosis of early and curable cases; and affording proper treatment for the sick, both as to medical attention and nursing.

The broad plan of attack which is being made by the Massachusetts Board of Public Health is being watched with the greatest interest, embodying as it does a definite and continuous campaign of public instruction and the maintenance of clinics in all parts of the state, not to speak of a special cancer hospital.

Within the last three years there have been two international cancer conferences, one in America to consider the practical applications which should be made of existing knowledge, and the other in London on the subject of research.

The literature devoted to cancer has increased enormously during the last five years, every conceivable aspect of the question receiving its share of attention. The daily press, instead of avoiding the subject, as was formerly customary, eagerly prints as news acceptable to its readers whatever appears authentic and of value. The publication of a series of sixteen informative articles without any news value whatever in over five hundred newspapers was a public service which was without precedent and is not likely soon to be repeated for any other cause.

Although there has been distinct progress in the recognition of cancer as a great social, medical and public health question, the scientific solution of its causation awaits further study. Research in many directions and by specially qualified persons is now being actively prosecuted all over the world. The expectation is not that a single and complete solution can be found for all the cancers which occur, since they appear in a great variety of forms and grades of malignancy, but it is believed that by separating cancers into small groups or studying them individually, the chain of events which leads up to the development of the cancer cell may eventually be worked out.

REFERENCE

1. *Appraisal Form for City Health Work* (3d ed.), 1929. American Public Health Association.

BOOK REVIEWS

REVIEWS of scientific books present one of the most difficult problems of an editor. There is an overwhelming deluge, and some publishers are very insistent in asking for reviews of those they send in. A good review is an advertising asset, and not many years ago certain publishers demanded favorable notices at the cost of cutting the journals from their free list. Happily there has come about a great change in this respect. While publishers of course wish favorable reviews, protests against unfavorable ones are not common—at least in our experience. In a recent article the well known editor of *Science*[1] tells of an instance in which the sales manager of a university press canceled advertising on account of a notice to which he took exception.

Many factors must be taken into consideration in the reviewing of books. The first is the selection of those which are suitable for, and

worthy of, review in the particular publication, this depending to a great extent on the character of the journal and the class of readers which it reaches. It goes without saying that considerable latitude is possible, since there is much overlapping. A scientific journal must at times consider even novels and popular books, either to commend them for general reading or to condemn their false teaching. Our JOURNAL must consider books which are of interest and value to its varied membership.

When a book has been selected, to whom shall the review be entrusted? Preferably to some specialist on the subject of which it treats. In general, this seems the wisest course, but at times leads to unfair or too exacting criticism. Unrequested reviews are apt to be favorable, written by some friend of the author, though they may also come from scientific adversaries. The great object of an editor must be to obtain a fair and impartial criticism, devoid of personalities, adhering closely to the material presented, taking into consideration the claims made by the author, and to some extent those of the publisher. It must always be remembered that reviews are useful to readers who may not have opportunities for the critical selection of their reading matter. Many buy their books on the strength of reviews in standard journals. Authors generally appreciate fair reviews, and consider the criticisms in the preparation of second editions.

The editor must always have in mind the reputation of his journal for accuracy and fairness. A favorable opinion of a poor book reacts upon a journal, through loss of confidence on the part of readers. The reviewer must always be accurate in his statements and able to back them up by quotations, with page and line. Reviews should stick to the subject matter of the book. Too many reviewers seize the opportunity to write essays on some individual fad. Such contributions are articles rather than reviews, and often have only a remote connection with the material submitted.

There is great diversity of opinion as to the value of book reviews. Some hold that they are of interest to only three parties—the author, publisher and reviewer; others, that the larger part of a journal should be devoted to reviews. Such opinions are reflected in the practices of different editors. In our own JOURNAL, as much space as possible will be given to reviews. Writers will be selected for their special qualifications, and are urged to remember that the essentials of a good review are honesty, knowledge of the subject, clarity of expression, and brevity.

REFERENCE

1. *Science*, Feb. 22, 1929, p. 220.

ASSOCIATION NEWS

58th Annual Meeting, A. P. H. A.
Minneapolis, September 30 - October 5
Registration Headquarters — Exhibit Hall, Minneapolis Auditorium

The Executive Board Proposes Association Changes

SHORTLY after the last Annual Meeting, the President of the A. P. H. A. requested the Committee on Cooperation, Development and Finance to study the services rendered by the Association to its members and to the cause of public health generally; to take stock of the effectiveness of its organization, and of its administrative and financial methods; and to devise ways and means of realizing the still undeveloped potentialities of the Association for fruitful activity. This organization like all others must be prepared for change and expansion to keep pace with scientific progress and the changing ideals in public health work. To achieve these purposes, the Committee on Coöperation, Development and Finance, with the approval of the President and with expert guidance, proceeded to analyze and study the Association.

In this effort the committee aimed to formulate proposals which would develop our activities in accordance with a carefully conceived, long-visioned and well-organized plan, which would simplify and strengthen our administrative machinery and would effect economies where possible, and at the same time define the responsibilities of our officers and the administrative staff in achieving our major objectives.

The facts and the observations that developed from these studies were embodied in large part in a report prepared by a consulting economist whom the committee had engaged to aid it. The following summarizes the chief disabilities which the studies of the committee revealed:

1. The Association has lacked financial resources to encompass the various enterprises which it has attempted to carry on.
2. Enterprises of importance have suffered because of a scattering of effort, time and money along too many lines.
3. Continuity in policy and in administration has frequently been lacking.
4. The executive as well as the administrative functions of the officers have not been clearly defined—as a result uncertainty and variation in performance have followed.
5. Clearly defined financial policies have been lacking. The financial methods of the Association have in important respects lacked effective organization.
6. In general, the value of the Association's service has been seriously impaired by various defects revealed by the committee's study. The objectives of the Association could not for these reasons be adequately achieved, and substantial financial and personal support is not likely to be secured until appropriate measures to remedy these deficiencies have been instituted.

On the basis of these findings certain proposals as to policies, organization, major activities and finances have been formulated. It has not been possible

to circularize all of our membership to acquaint them with these findings and proposals and to profit by their experience and suggestions, because of the costs involved and the necessity for prompt action. The Executive Board was therefore constrained to content itself with the counsel of a necessarily limited number of Fellows with whom contact could more readily be made, before publishing these proposals.

In offering the suggested changes, the Executive Board is mindful of the many excellent features in our present organization which it has sought to retain. It has also been studious to avoid modifications except where they would be likely to serve valuable purposes. Within the limits of space here available it is impossible to set forth the many considerations and reasons that have led to the conclusions upon which these changes are based.

In general the primary aim in these recommendations is to establish continuity in the government of the Association and to strengthen the executive and administrative services. In addition, such revisions have been designed to add to our existing governmental machinery the agencies and the personnel which could best formulate and execute comprehensive and sustained activities.

To effect these purposes, the Executive Board proposes certain necessary changes in our Constitution and By-laws which are here grouped under 4 headings:

1. General administrative organization
2. Major objectives and machinery for their development
3. Executive organization
4. Changes in Section organization

I. GENERAL ADMINISTRATIVE ORGANIZATION

A. *Officers*—To remedy the lack of continuity in administration, it is proposed that the Association elect annually a President-elect, who shall be a member of the Executive Board and in intimate contact with the affairs of the Association. In place of the Executive Secretary, it is proposed that a Fellow shall be elected to serve as Secretary of the Association with such clerical aid and assistance from our employed staff as he may require. The duties of the various elected officers are to be more specifically defined in the Constitution and By-laws in order to fix responsibility and to mark the bounds of authority.

B. *The Governing Council*—The functions of the Governing Council are to be as follows:

1. To establish policies for the Association and for the guidance of the Executive Board and the officers.
2. To establish Sections of the Association; to combine or discontinue them when necessary; to maintain coördination among them; and to formulate general rules governing the policies of the Sections.
3. To submit to the vote of the Association all resolutions which have received the approval of the Governing Council.
4. To elect and establish qualifications for Affiliated Societies, Fellows, Honorary Fellows and Members as provided in the By-laws.
5. To elect the Executive Board and the officers of the Association.
6. To receive from the Executive Board at its first session, at the time and place of the Annual Meeting of the Association, a definitely formulated statement of a program of major activities proposed for the ensuing year. At the Annual Meeting of the Association the Governing Council shall determine in general outline the allocation of Association moneys in the budget for the ensuing year. It shall require a report from the Chairman of the Executive Board in which the work, the accomplishments and the financial status of the Association during the year preceding such Annual Meeting shall be reviewed.
7. To publish after each of its meetings an abstract of the minutes of such meetings.

The purpose of the requirement that the Governing Council publish minutes in abstract form of all of its meetings is to acquaint the membership at large with its activities.

Inasmuch as it is desirable to provide

for as democratic and as equitably apportioned representation on the Governing Council as possible, it is recommended that the members at large to be elected each year to the Governing Council shall be nominated by a Nominating Committee which shall consist of one Fellow elected by each section, and an eleventh one designated by the Executive Board, all of whom shall be designated at the preceding Annual Meeting. It should be clearly noted in this connection that this recommendation does not abolish the present provision in the Constitution and By-laws making it possible for any twenty-five Fellows to make nominations for membership on the Governing Council.

In view of the fact that membership on the Governing Council should have great significance, the Executive Board decided to hold a referendum to ascertain from the Fellows of the Association the conditions under which an Affiliated Society may be privileged to be represented on the Governing Council. It has been contended that those Affiliated Societies that are well organized and a source of strength and support to the American Public Health Association should logically be thus represented. On the other hand, certain health associations which may now or in the future be affiliated may lack such elements of strength, and therefore the question arises whether they should exercise voting power. The referendum will in due time be held and the question will be more adequately presented.

C. *The Executive Board*—The Executive Board shall be composed of four Fellows to be elected by the Governing Council for terms of five years each. In the beginning, one shall be elected for a term of one year, one for two years, one for three years, and one for four years, and thereafter one shall go out of office each year. These elected members shall be past or present members of the Governing Council. The Executive Board shall in addition comprise the President, the President-elect, the retiring President, the Treasurer, and the Secretary, as members ex-officio with full voting power.

The Executive Board shall elect its own chairman, and he shall hold office for not more than three years, and not be reëlected after such tenure of office until one year has elapsed. He shall have authority to appoint all committees of the Association, subject to approval by the Executive Board. He shall be a member of the Governing Council. These proposals, also, are designed to fix responsibility more definitely and to centralize administrative control.

The proposed duties of the Executive Board shall be as follows:

1. To direct the administrative work of the Association.
2. To act as Trustee of the Association's properties.
3. To plan methods for the procurement of funds.
4. To recommend budgets for the Association's work.
5. To conform to the policies of the Governing Council in the conduct of its work.
6. To approve the appointment of committees by its chairman.
7. To transmit a report of its proceedings and transactions to the Governing Council at least thirty days before each Annual Meeting.
8. To ratify the appointments and changes in the employed staff of the Association.

II. MAJOR OBJECTIVES AND MACHINERY FOR THEIR DEVELOPMENT

In order to focus clearly upon the major objectives of the Association and to create machinery for their more comprehensive development, it is recommended that the fourscore existing committees be discontinued. Where definite commitments have already been made, however, with respect to special projects, the Executive Board is to carry out such commitments in a way that will best harmonize with the general scheme of organization herein proposed.

The Executive Board is reasonably

confident that all of the major objectives of the Association can be effectively centralized in four standing committees. It feels convinced that all committee activities will find a logical and effective place under one of these four standing committees. Any special committees that may be required to carry on important services of the Association can be constituted as subcommittees of one of the standing committees. The functions and composition of these four standing committees are briefly stated in the following:

A. *Committee on Administrative Practice*—The size, the composition and the employed personnel of this committee are to remain unchanged, so as to carry out commitments already made.

B. *Committee on Meetings and Publications*—The scientific transactions at our Annual Meetings form the largest and most substantial contribution to our publications. Furthermore, the major activities of the Association and its members would profit most if the plans and the conduct of the Annual Meeting were in the hands of a standing committee which would correlate the program of the Annual Meeting with the publication work of the Association. To this end a committee to be known as the Committee on Meetings and Publications shall be appointed to consist of five members serving for terms of five years each; in the beginning one shall go out of office at the end of one year, one at the end of two years, one at the end of three years, and one at the end of four years, and thereafter one shall go out of office each year. After serving for two consecutive terms a member shall not be eligible for reëlection until one year has elapsed.

C. *Committee on Research and Standards*—The Committee on Research and Standards should be responsible for carrying out research in relation to the development of standards in important branches of public health work and coördinating such research and standardization in a manner that will not conflict with the functions of the Committee on Administrative Practice. No standards shall be promulgated as the official and authorized judgment of the Association except with the approval of the Governing Council. This committee shall also be charged with the duty of reviewing from time to time standards already established, so that they will be made to harmonize with current theory and practice. This committee shall consist of fifteen members representative of the various points of view in public health practice, appointed for three year terms, one-third the total membership expiring annually. After serving for two consecutive terms a member shall not be eligible for reëlection until one year has elapsed.

D. *Committee on Fellowship and Membership*—This committee shall pass upon the eligibility of Fellows and Members; it shall carry on membership promotion and recommend action to the Executive Board to suspend or drop Fellows and members for nonpayment of dues. The committee should consist of ten Fellows, one to be chosen by each section and to serve for a term of two years. In the beginning, the Executive Board shall designate the five members who shall serve one year. An eleventh member shall be designated by the Executive Board to serve for two years. After serving for two consecutive terms a member shall not be eligible for reëlection until one year has elapsed.

The programs and policies and special activities formulated and directed by the above named standing committees should be carried out by salaried secretaries employed for the purpose.

The Executive Board cannot too emphatically record its judgment based on the studies that have been made, that no project should be included in the program of activities for a given year unless such project has been formally approved by the Governing Council. It also seeks to establish it as a principle of action that the Executive Board shall prepare and submit a tentative program of activities and a tentative budget for the next ensuing year, and that such program of activities and budget shall be acted upon by the Governing Council at the Annual Meeting, at which time the latter will determine in general outline the allocation of Association moneys in the budget for the ensuing year. A further principle of action which the Executive Board would recommend to future Executive Boards and Governing Councils would be to withhold from submitting or approving a program for which financial support is not reasonably assured.

III. EXECUTIVE ORGANIZATION

It is recommended that the title of the Executive Secretary shall be changed to Executive Director, or to some other designation which will more accurately indicate his actual position and duties in the Association.

As a result of these studies certain changes have already been effected in the auditing service, and in relation to office management. The more substantial changes that have been found necessary are under consideration and will be referred to the succeeding Executive Board for final decision.

The management of the finances and the financial policy of the Association were made the subject of very careful study. Changes have been inaugurated and will be further developed to bring our financial methods into harmony with current business practice.

IV. CHANGES IN SECTION ORGANIZATION

To overcome certain disabilities in the organization and functions of the section councils and better to define their duties and responsibilities, it is recommended that section councils shall each consist of five members elected by the section for terms of five years each; in the beginning one shall serve for one year, one for two years, one for three years and one for four years, and thereafter one shall go out of office each year. This will assure continuity in planning the activities and in shaping the policies of the respective sections.

In view of the fact that section constitutions and by-laws have not been generally adopted, nor in effect where adopted, it is deemed necessary in the best interests of simple and effective organization to eliminate section constitutions and by-laws.

It is recommended that each section council shall elect its own council chairman and such other council officers as it deems necessary, and the duties of the section council are as follows:

1. To recommend papers, and to make general recommendations in relation to the Annual Meeting program.
2. To advise on section membership.
3. To advise on section policies.
4. To submit annually to the Governing Council through the Executive Board a report of the transactions of the section.
5. To report annually to the Governing Council through the Executive Board on the plans, scope and policy of the section during the succeeding year.
6. To formulate rules of procedure for the section.
7. To approve and transmit to the Governing Council resolutions originating in the section.
8. To advise on the publication of papers and reports presented at the section meetings.
9. To advise with respect to the appointment of technical committees, sub-committees or section representatives on special committees of the Association.

It is understood that the election of section officers, namely chairman, vice-chairman, and secretary of the section, shall go on as at present.

It is recommended that the Constitution and By-laws be amended to require that every Fellow or Member shall consummate affiliation with some section in the Association within twelve months after election to such Fellowship or Membership. A Fellow or Member failing so to affiliate shall be placed in an appropriate section by the Executive Board.

The Executive Board submits the results of its labors and deliberations in the hope that those of our Fellows and Members who have constructive suggestions to offer will do so at once, and that all will coöperate in giving effect to the substantial features of the proposed plan of reorganization.

PROPOSED CONSTITUTIONAL AMENDMENTS

In accordance with the provision of the Constitution, notice is hereby given of the following proposed amendments to the Constitution, which, if approved by the Governing Council, will be voted on at the Minneapolis meeting.

ARTICLE III, *Section A,* Paragraph 4.

Now reads:

A representative to be appointed by each affiliated society to serve for one year. Such representative shall be at the time of his appointment a Fellow of the American Public Health Association.

To be amended as follows:

Representatives to be appointed by Affiliated Societies as provided for in the By-laws. Such representatives shall be Fellows of the American Public Health Association.

ARTICLE III, *Section E,* Paragraph 4.

Now reads:

To elect Affiliated Societies, Fellows and Honorary Fellows as provided in the By-laws.

To be amended as follows:

To elect and establish qualifications for Affiliated Societies, Fellows and Honorary Fellows as provided in the By-laws.

ARTICLE III, *Section E,* Paragraph 6.

Now reads:

To receive from the President, on behalf of the Executive Board, a report of the meetings, policies and work of the Executive Board; a report from the Executive Secretary concerning the administrative work of the year; and a report from the Treasurer concerning the finances of the Association.

To be amended as follows:

To receive from the Executive Board at its first session, at the time and place of the Annual Meeting of the Association, a definitely formulated statement of a program of the major activities proposed for the ensuing year. At the Annual Meeting of the Association the Governing Council shall determine in general outline the allocation of Association moneys in the budget for the ensuing year. It shall require a report from the Chairman of the Executive Board in which the work, the accomplishments and the financial status of the Association during the year preceding such Annual Meeting shall be reviewed.

Add:

7. To publish after each of its meetings an abstract of the minutes of such meetings.

ARTICLE III, *Section G.*

Omit the word "Executive."

ARTICLE IV.

Now reads:

The officers of this Association shall be a President, three Vice-Presidents, an Executive Secretary and a Treasurer. The officers, with the exception of the Executive Secretary, shall be elected by written ballot of the Governing Council as provided in this article and in the By-laws. Officers shall serve from the close of the Annual Meeting when elected, until the close of the next Annual Meeting, and until their successors are elected and qualified. A majority vote of the Councilors voting shall be required to elect, and if no candidate receives a majority vote on the first ballot, the candidate receiving the smallest number of votes shall be dropped after each ballot in succession until a majority vote is obtained. The Executive Secretary shall be elected by and serve at the pleasure of the Executive Board.

To be amended as follows:

The officers of this Association shall be a President, a President-elect, three Vice-Presidents, a Secretary, a Treasurer and the Chairman of the Executive Board. The officers, with the exception of the Chairman of the Executive Board, shall be elected by written ballot of the Governing Council as provided in this article and in the By-laws. Officers shall serve from the close of the Annual Meeting when elected, until the close of the next Annual Meeting, and until their successors are elected and qualified. A majority vote of the Councilors voting shall be required to elect, and if no candidate receives a majority vote on the first ballot, the candidate receiving the smallest number of votes shall be dropped after each ballot in succession until a majority vote is obtained. The Chairman of the Executive Board shall be elected by the Executive Board.

ARTICLE V.

Substitute word "Fellows" for "Members."

APPLICANTS FOR FELLOWSHIP

LABORATORY SECTION: George F. Reddish, Ph.D., Washington, D. C.

HEALTH OFFICERS SECTION: Henry L. Akridge, M.D., Brunswick, Ga.; George H. Bigelow, M.D., Boston, Mass.; William C. Blake, M.D., Princeton, N. J.; Lester Van D. Chandler, Hackensack, N. J.; Warren F. Draper, M.D., Washington, D. C.; Charles H. Kibbey, M.D., Fairfield, Ala.; Burton K. Kilbourne, M.D., Fargo, N. D.; George Parrish, M.D., Los Angeles, Calif.; Charles W. Strowger, M.D., New Orleans, La.

VITAL STATISTICS SECTION: John Collinson, M.D., Baltimore, Md.; Willard C. Smith, Washington, D. C.

PUBLIC HEALTH ENGINEERING SECTION: Victor M. Ehlers, Austin, Tex.; A. H. Wieters, Des Moines, Ia.

INDUSTRIAL HYGIENE SECTION: Samuel C. Beach, M.D., Chicago, Ill.; James A. Britton, M.D., Chicago, Ill.; Bernard S. Coleman, Jersey City, N. J.; Henry H. Kessler, M.D., Newark, N. J.; Daniel J. Kindel, M.D., Fairmont, W. Va.; Clarence O. Sappington, M.D., Chicago, Ill.; Harold W. Stevens, M.D., Newtonville, Mass.

FOOD, DRUGS AND NUTRITION SECTION: Carl D. Geidel, Le Sueur, Minn.; Frederic W. Howe, Brooklyn, N. Y.; David B. Jones, Ph.D., Washington, D. C.; William B. Palmer, Orange, N. J.

CHILD HYGIENE SECTION: Helen Albano, Dr.P.H., Nashville, Tenn.; Maud A. Brown, Ph.B., New York, N. Y.; Reba F. Harris, Greensboro, N. C.; Harriet L. Hartley, M.D., Philadelphia, Pa.; Charles N. Johnson, D.D.S., Chicago, Ill.; Guy S. Millberry, D.D.S., San Francisco, Calif.; Clealand A. Sargent, M.D., Dover, Del.

PUBLIC HEALTH EDUCATION SECTION: Charles F. Glueck, Boston, Mass.; George F. Granger, Detroit, Mich.; Fred J. Wampler, M.D., Richmond, Va.

EPIDEMIOLOGY SECTION: Frank E. Coughlin, M.D., Harrisburg, Pa.; Edward H. Marsh, M.D., Albany, N. Y.; Clarence L. Scamman, M.D., Newtonville, Mass.; Herman F. Senftner, M.D., Albany, N. Y.

UNAFFILIATED: Adelaide Brown, San Francisco, Calif.; John C. Burkle, M.D., Lafayette, Ind.; Archibald S. Dean, M.D., Jamestown, N. Y.; George D. Heath, M.D., Bloomington, Ill.; John A. Kingsbury, New York, N. Y.

NEW MEMBERS

Angel de la Garza Brito, M.D., Mexico City, Mex., General Supervisor, Public Health Service

George H. Conn, D.V.M., B.S., Freeport, Ill., Veterinarian

Herbert A. Dirckze, Paiyagala, Ceylon, Medical Officer of Health, Kalutara Totamune Health Unit (Assoc.)

Winnifred G. Edgerton, R.N., Dubuque, Ia., School Nurse, Newton, Ia.

J. Frank Field, Caruthersville, Mo., Sanitary Inspector

Mildred W. Gardiner, M.D., B.A., Middletown, O., Assistant Surgeon, American Rolling Mill Co.

Abraham A. Gonzalez, M.D., Mexico City, Mex., Assistant General Surgeon

Geneva F. Hoilien, R.N., Detroit, Mich., Assistant Director, Detroit Visiting Nurse Association

Lafayette Isley, M.D., Excelsior Springs, Mo., City Health Officer

Dr. Bruno LaHaye, Nicolet, P. Q., Health Officer

Christina R. Love, R.N., Philadelphia, Pa., Pennsylvania Department of Health

John J. McNamara, M.D., A.B., Lowell, Mass., Director of School Hygiene

Josephine Marchesseau, R.N., Elkhart, Ind., Child Welfare Supervisor

Ellen O. Miller, Wellesley Hills, Mass., Clerk-Technician, Board of Health

Lucy M. Osler, Punxsutawney, Pa., State Nurse

George Shabo, D.C., Ph.C., B.S., Los Angeles, Calif. (Assoc.)

Solomon L. Skvirsky, M.D., Holyoke, Mass., Secretary, Board of Health

George L. Thompson, M.D., Wickliffe, Ky., Health Officer

Alexander R. Volk, Jersey City, N. J. (Assoc.)

William G. Wheatley, M.D., Azusa, Calif., Deputy Health Officer

Harriet F. Young, R.N., B.S., Wilkes-Barre, Pa., Executive Director, Visiting Nurse Association

DECEASED MEMBERS

Charles W. Bartlett, M.D., Tampa, Fla., Elected Member 1928

William J. Fleming, M.D., Troy, N. Y., Elected Member 1928

Lockhart Nelson, Hillsboro, O., Elected Member 1928

Chandler P. Robbins, M.D., Columbus, O., Elected Member 1925

PUBLIC HEALTH ADMINISTRATION

HENRY F. VAUGHAN, D.P.H.

Reporting of Venereal Disease in Michigan—[In keeping with our policy of endeavoring to make this section a forum for Health Administrators, Don M. Griswold, M.D., D.P.H., Deputy Commissioner of the Michigan State Health Department, has favored us with a statement regarding the policy of his department with respect to the reporting of venereal diseases. This statement was written in response to one of the numerous inquiries received at Dr. Griswold's office but should prove of interest to all readers of the Journal.—Editor.]

All positive laboratory reports are presented not only to the physician but to our Bureau of Records and Statistics. These are checked against reported cases. If the case is not reported in a reasonable length of time, it is made a subject for query.

We keep in close touch with clinics, hospital services and other organizations caring for these patients. If we can find occasion to call their attention at least once a month to the fact that they are amiss in reporting, it serves to keep them alert.

Our reporting system:

(a) Our blanks require cases to be reported directly to the Michigan Department of Health, giving the name, street, and number. We have ceased emphasizing the venereal aspects of the diseases and are emphasizing their contagiousness and the fact that the greatest thing that a public health agency can do is to reduce the time of infectiousness. By doing away with many of the war-time procedures which only indirectly bear on the problem, and by concentrating on the parts of the program that are effective and have a direct bearing on the people, we are making progress. We believe that cases should be reported by name and address. I have heard health officers argue for hours that the number of the patient is as much good as the name. I can only say for these men that they are piling up administrative difficulties for themselves and making it much harder to accomplish the few simple things that we know are effective. I do not believe it is good administrative policy to make work harder, and we always strive to make it easier. Our cases are, therefore, reported by name and address.

(b) Is the question "Is this patient now under treatment with you?" important?

If this question is answered "yes," we feel that all that can be done is being done to make this patient non-infectious at the earliest possible moment. If this patient does not continue treatment with the physician until he is non-infectious, this fact must be reported to the Michigan Department of Health. When such report is received and an inspector calls on the individual and requires that he go under treatment at once, usually he claims that he had merely changed his physician. We cannot designate the doctor, but the patient must be under medical care if he is to be free from the houndings of our inspector.

If the above question is answered "no," the inspector calls on the individual and takes him to a physician where he will receive adequate treatment.

(c) The source of infection is also required to be given by name and address. If the source is under treatment with the same doctor as the orig-

inal case, he usually designates this fact. We then have an inspector call on this person and explain that he has not been following the doctor's advice with regard to preventing the spread of infection to others and that this constitutes a penitentiary offense in this state. If we are satisfied that this advice is sufficient it is left as a warning. If it appears that it is not sufficient, we take him to court and send him to a penal institution where he will receive proper attention.

If the source is not under treatment with the doctor who reports the original case, we go over our records to see if the case was reported by some other doctor. If it is found to have been reported, we proceed as above. If it is found not to have been reported, the inspector calls on the person to inquire into the facts of the case. The state law gives us the right to make examinations of persons that are "reasonably suspected" of having a venereal disease. Our position is that if a report reaches us as described above, that constitutes sufficient grounds to be "reasonably suspected."

If after this examination the physician will certify to the fact that the patient is non-infectious, we can go no further. If he finds laboratory or clinical evidence of the case being infectious, we require the person to place himself under treatment at once.

You can see from this that our efforts are directed toward placing venereally infected persons under treatment. This is the best way, of which we have knowledge, to render them non-infectious at the earliest possible moment. This wins for us the approval of the medical profession, who give their coöperation in the matter of case reporting. It frequently happens that a physician will report a case of venereal disease, and by using his ingenuity, will get the name and address of the source. Our inspector will call on the source and, if clinical examination is indicated, will bring the source of infection to the doctor's office for examination. Thus, the doctor has tangible evidence that we are coöperating with him. We can be of service to him, and he can be of service to us. To bring to the doctor the case needing treatment is far better pay for case reporting than would be the taking of 10 or 25 cents out of the state treasury for such report.

Use of Tabulator in Syracuse—[I. F. Thompson, M.D., has been good enough to send the Editor a statement concerning the use of the tabulator employed by him and Dr. Ruhland. This tabulator is a simple device which gives a ready method of finding the total amount of work performed.—Editor.]

Record forms have been planned for the Visiting Nurse Association and the School Health Service of Syracuse and both are using the tabulator to their entire satisfaction. The usual records can be planned for the use of such an aid. The principle is that of the "visible index." In this instance, the total of the day's work performed appears as the "visible index." The routine of operation is as follows:

In the Nursing Division of the Health Department and Visiting Nurse Association the daily reports are made out by the nurse and then given to the station supervisor for her information and checking. After the report is corrected, it is filed under the nurse's name. Shortly after the end of the month, when all the daily reports have been received, all the reports of an individual nurse for the month are placed in the tabulator and the columns added. A blank daily report is placed at the bottom of the tabulator on which is entered the totals of the nurses' work for the month. The tabulator should have as many leaves as there are working days in the month. After the totals for each nurse have been made, then

the sheets bearing the totals are placed in the tabulator and the total activities of the nursing staff are secured in one addition. These totals could be made at the end of each week, if desired.

What is saved by this method of procedure? In making up a bureau report under ordinary methods it is necessary to transcribe to a nurse's monthly report her activities for each day. At the end of the month, the monthly summary is made for each nurse. It is then necessary to transcribe each monthly summary to a summary for the department, then add, to obtain the total for the entire bureau. By means of the tabulator, there is no transcribing. The original figures are added to obtain the total for the individual nurse and that total is added to obtain the total for the bureau.

We believe it is a labor saver. Reports from the Visiting Nurse Association show that while they have doubled their staff and have more than doubled their work, the one clerk is able to get out her monthly report in less time than before they adopted this method.

LABORATORY

C. C. YOUNG

THE DETERIORATION OF IODIZED SALT

M. STARR NICHOLS, PH. D., FELLOW A. P. H. A.

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SINCE iodized salt has been advocated and recommended quite generally by health officials and health boards as a means of supplying the deficiency of that element in the diet, it was thought advisable to ascertain if the quantity of iodide added remained under ordinary conditions of handling and sale of the article.

The samples were purchased in the open market. There were no means of determining how long the iodide had been mixed with the salt but a statement was given by the wholesaler or retailer of his opinion as to the age of the salt. The answers showed the samples to be from 1 to 4 months old at the time of purchase. Analyses were not made until 6 months after collection, so that the uncertainty as to age would be somewhat compensated for.

Twenty-six months from the time of the first analyses the iodide was again determined. If we consider the average age as 9 months at the time of the first analyses, and 35 months at the time of the second, we should be near the truth for estimation of deterioration.

Determination of the quantity of iodide present was carried out by the method of Kelly and Husband,[1] which is a slight modification of that of Kendall.[2] In applying this method it was found satisfactory to omit the first part of the procedure, which was intended for use when organic matter was present.

METHOD

Ten grams of the salt were placed in a Kjeldahl flask and 400 c.c. of water added. After solution, 3 c.c. of syrupy phosphoric acid and 6 drops of bromine were added. The flask was agitated to dissolve enough of the bromine so that the solution took on a deep yellow to brownish color. This treatment oxi-

TABLE I

AMOUNT OF IODIDE IN IODIZED TABLE SALT

Sample Designation	Amount of Sodium or Potassium Iodide Claimed Per Cent	Amount Found After 9 Months Per Cent	Loss First Period Per Cent	Amount Found After 35 Months Per Cent	Loss Second Period Per Cent
A	0.05	0.034	32.	0.029	15.
B	0.02	0.017	15.	0.016	6.
C	0.02	0.013	35.	0.015	—
D	0.02	0.026	—	0.016	38.
E	0.023	0.0105	54.	0.010	4.
F	0.02	0.008	60.	0.008	0
G	0.02	0.011	45.	0.0077	31.
EE *	0.023	0.015	35.	0.015	0
H	0.0222	0.017	23.	0.0008	95.
EEE	0.023	0.018	22.	0.015	16.
AA	0.05	0.042	8.	0.039	7.
FF	0.02	0.029	—	0.029	0
EEEE	0.023	0.008	65.	0.01	—
K	0.02	0.0012	94.	0.00	100.

* Samples with more than one letter indicate same brand purchased at different localities.

dizes the iodide present to iodate. After a few moments the flask was placed on the Kjeldahl burner, connected with the gas exhaust, and the solution boiled until there was no noticeable trace of bromine left. This usually required the loss of approximately 100 c.c. of water. To make sure that all the bromine had been expelled, a pinch of salicylic acid was added to the flask to offer combination to any trace of bromine which might remain. The flask containing the iodate in solution was cooled to room temperature, 0.25 to 0.5 gm. of potassium iodide dissolved in 5 c.c. of water was added and the resulting iodine titrated with N/200 sodium thiosulfate solution made freshly from a N/40 carefully standardized solution. The end point was accentuated by the usual starch indicator solution.

The iodide present in the salt was then calculated by the following relation:

$$\frac{\text{c.c. thiosulfate used} \times .0009301}{6} = \text{Potassium Iodide present in sample taken}$$

This method permits the estimation of minute quantities of iodides or iodine because 6 times as much iodine is titrated as was originally present in the substance analyzed.

To make sure that the large amount of sodium chloride would not interfere with estimation of the small amount of iodide, salt containing a known amount of iodide was analyzed. Four duplicate determinations were made, adding 0.005 gm. of potassium iodide to 10 gm. of iodide free salt. These gave 0.00502, 0.00503, 0.00502 and 0.005 gm. respectively.

DISCUSSION

The results show considerable loss during the first period of storage and a corresponding decrease thereafter. These first losses may, however, be only apparent as no attempt was made to check the accuracy of the manufacturer's statement of iodide content. Johnson and Herrington [3] consider that

sunlight and heat accelerate the deterioration, and individual samples before collection may have been kept under unlike conditions. Von Fellenberg [4] states that potassium carbonate does not affect the loss. After collection our samples were kept on the chemical shelves of the laboratory away from heat and sunlight and at room temperature. After 35 months' storage it will be noted that samples H and K had lost practically all their iodide.

Manufacturers of C, G and K stated that 1 per cent of calcium phosphate had been added. Samples A, E, H and AA contained 1 per cent calcium phosphate + 1 per cent sodium bicarbonate, and with the exception of sample H these samples did not deteriorate appreciably.

Other antihardeners used were magnesium and calcium carbonates. No definite relationship was established between these added materials and the keeping qualities.

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VITAL STATISTICS

LOUIS I. DUBLIN, PH. D.

Pulmonary Tuberculosis among the Insured—An analysis was made of 1,000 deaths from pulmonary tuberculosis among insured policy holders. The material for this study was taken from the files of the Pacific Mutual Life Insurance Company of California. The data compiled represent the findings in the medical examiners' reports at the time insurance was issued, the Disability Claim file, and the Death Record. A 15-year period of time is covered extending from 1913 to 1928. The average time that elapsed from the date of application to the beginning of illness was 4 years. The disability covered an average period of 2 years and 3 months. The average life policy was between 7 and 8 years. For one-third of the policies it was 5 years or less; for one-third 5 to 10 years; and for one-third over 10 years. There was an average age of 32 years at the time of application, and at the beginning of illness the age was approximately 35 years. The average age of death was between 38 and 40 years. Underweight occurred among 761 of the cases. Two hundred were 5 per cent underweight; 246 were 10 per cent underweight; and 127 were 20 per cent or more underweight. Two hundred and thirty-nine of the cases were overweight. There was a family history of tuberculosis in 7.4 per cent of the underweights and 8.7 per cent of the overweights. Low blood pressure was found in 3.2 per cent of the underweights and 2.1 per cent of the overweights. A history of influenza was found in 11 per cent of the underweights and 5.9 per cent of the overweights, and a history of common colds was found in 5.4 per cent of the underweights and 6.2 per cent of the overweights. A history of lymph-node enlargement was found in only 2 cases.

A study of the data suggests that

underweight is the factor which most clearly indicates a bad prognosis. A family history of tuberculosis associated with underweight is of less importance than is generally assumed. This conclusion is drawn from the fact that there was a positive family history in just as high a percentage of overweights as in underweights. A personal history of upper respiratory disease is a common finding, and of importance especially if the condition is chronic or recurrent. Low blood pressure is not of vital prognostic significance.—L. H. Lee. An Analysis of 1,000 Deaths from Pulmonary Tuberculosis among Insured Policyholders, *Am. Rev. Tuberc.*, 19: 412 (Apr.), 1929.

Diphtheria Mortality in Large Cities of the United States in 1928—A survey of diphtheria deaths in 81 cities of more than 100,000 population shows that 11 cities had mortality rates of less than 2.0 per 100,000 population in 1928. Two cities, Grand Rapids and Tacoma, had no diphtheria deaths during 1928. Tacoma was among the 10 cities with highest diphtheria deaths in 1925 and 1926, and Grand Rapids among the 10 cities with highest 1920–1923 averages. Of the other 11 cities, Des Moines had a rate of 0.6, Erie a rate of 0.7, Seattle a rate of 1.0 and Utica a rate of 1.0. Rates of 10.0 and over occurred in 21 cities in 1928, as against 31 in 1927. In 1928 there was only 1 city, Newark, which had a diphtheria death rate of 20.0, whereas in 1927 there were 2 such cities. Among the eight geographic divisions, the East North Central group of cities had the highest death rate of 11.3, and the Mountain and Pacific group had the lowest rate of 4.7.

Of the 12 New England cities, the Fall River diphtheria death rate showed a striking decrease from 14.3 in 1927 to 3.0 in 1928, the Lynn rate decreased from 19.1 to 6.6, and the New Bedford rate decreased from 15.6 to 9.0. In the Middle Atlantic group the rate for Utica fell from 22.6 in 1926 and 29.2 in 1927 to 1.0 in 1928. In the South Atlantic cities Jacksonville and Baltimore had decreases from 7.2 to 3.5, and from 11.3 to 7.6, respectively. In the East North Central group the largest increase was shown in Akron, where the 1928 rate was 12.4, as against the 1927 rate of 5.2. Three of the 4 East South Central cities had lower diphtheria death rates in 1928 than in 1927. Nashville was the only city with a rate above 10.0. Five of the 8 cities in the West South Central group showed 1928 rates that were smaller than the 1927 rates. The most conspicuous of the decreases were in Fort Worth and New Orleans where the rates decreased from 15.3 to 5.9, and from 15.1 to 8.6, respectively. In the Mountain and Pacific group, Salt Lake City showed a decrease in the diphtheria death rate from 14.0 in 1927 to 5.1 in 1928, and Tacoma, a decrease from 4.7 in 1927 to 0.0 in 1928.—*J. A. M. A.*, 92: 1759-1762 (May 25), 1929.

Typhoid Fever in Large Cities of the United States in 1928—The seventeenth annual report of the *Journal of the American Medical Association*, concerning typhoid fever in 81 cities, has been published. Nine of the 81 cities concerned in this study had no typhoid deaths during 1928. Of these 9 cities, 4 had similar records once before, and another, Yonkers, 4 times before. Twenty-five of the cities had death rates below 1.0 per 100,000 population, as against 20 in 1927. There were only 4 cities with death rates over 10.0 per 100,000.

Four of the 12 New England cities had no typhoid deaths during 1928. This is the largest number of cities in a single group ever to make such a record. For New Haven and Spring-

field it was the second successive year. The rate of 0.6 for Boston was the lowest ever recorded for that city. Fall River with a death rate of 4.5 had the highest in the New England group for 1928, and showed an increase over the 1927 rate of 2.3. In the Middle Atlantic group there were 2 cities, Elizabeth and Yonkers, with no typhoid deaths. The rate of 0.8 for Philadelphia was the lowest in its history. Atlanta in the South Atlantic group had a death rate below 10.0 for the first time since 1919, when its rate was 9.6. Its 1928 rate was 7.4 as compared with 14.0 in 1927.

In the East North Central group, Chicago lowered the 1927 death rate of 0.7 to 0.5, this being its third successive year with a rate below 1.0. Cleveland and Detroit had rates of 0.6 and 1.0 respectively, as compared with 1.0 and 1.2 for 1927. In the East South Central cities, the reductions in Birmingham and Memphis are especially notable. Birmingham's rate declined from 12.9 in 1927 to 7.2 in 1928, and that of Memphis from 14.5 in 1927 to 11.6 in 1928. Among the West North Central cities Duluth had no typhoid deaths. In the West South Central group, 4 of the 8 cities had lower rates in 1928 than in 1927. Tulsa had a rate of 3.5 in 1928, as against 8.7 in 1927, and San Antonio had a rate of 2.3, as against 5.7 in 1927. Tacoma, which stood at the foot of the Mountain and Pacific cities in 1927, and next to the foot in 1926, headed the list in 1928 with a record of no typhoid deaths. This is the second city in the group ever to attain this distinction.—*J. A. M. A.*, 92: 1674–1677 (May 18), 1929.

Measurements of Female Students—This study includes the measurements on 1,022 women entering the University of Minnesota during the school year 1925–1926. The average age was 19.6 years. The average height, 1,617 mm., was above that reported for the women in all American colleges, excepting Stanford, Smith and Vassar. Minnesota women averaged 128 mm. less in height than the men students, but there was no significant difference in variability. The average body weight of the Minnesota women was 54.37 kg., and the coefficient of variation was higher than in the men. In body build the Minnesota women averaged relatively more slender than any other American college group, excepting Oberlin and Nebraska. The average chest expansion was 63.42, as compared with 74 mm. for the men. The vital capacity in the Minnesota women averaged 2,888 c.c., which is above the averages for American college women, excepting Vassar and the groups of nurses. There was a marked sex difference, the vital capacity of the men averaging decidedly higher, even for the same stature and weight.

The correlation of stature with age was insignificant in the group. The normal increase of height with age up to about 20 years fails to occur, probably because those entering at the earlier ages are precocious physically as well as mentally. The correlation coefficient between stature and sitting height was 0.690; that between stature and weight, 0.451; and that between stature and chest girth, 0.254. The correlation between body weight and age in this group was low, there being only a slight tendency for increase of weight with age. The correlations between body build and age, pulse rate, and chest expansion are practically insignificant. The correlation with sitting height was low, while that of 0.672 with chest girth was high. These correlations are similar to those found in the Minnesota men. Vital capacity tends to decrease with age, showing a small negative correlation. The small correlation of 0.120 between vital capacity and chest expansion indicates

that in the women, even more than in the men, chest expansion is a very poor index of vital capacity.—C. M. Jackson. Physical Measurements of the Female Students at the University of Minnesota, with Special Reference to Body Build and Vital Capacity, *Am. J. Phys. Anthrop.*, 12: 363–411 (Jan.–Mar.), 1929.

Prophylaxis of Respiratory Disease with Vaccine—In an industrial plant employing 5,000 men, respiratory diseases caused 34 per cent of all cases of disabling illness, and 35 per cent of all time lost from sickness disability during the past 5 years. Vaccine therapy seemed to offer the most promising means of reducing the respiratory disease incidence. Treatments were given in October and November, 1927, and the results recorded on April 1, 1928. Of 382 cases given preventive vaccine treatment for colds, 68 per cent were benefitted. In two groups of apparently equal susceptibility, 30 per cent of the vaccinated group lost time from respiratory disease as against 49 per cent of the non-vaccinated group. Twelve cases of pneumonia occurred among the non-vaccinated employees and none among the vaccinated group. Sixty per cent of the men with a positive reaction to the vaccine were improved, as against 70 per cent with a negative result. It is probable that the degree of natural immunity governed the extent of the reaction, and that the individuals with a negative reaction had a higher degree of immunity than those with a positive reaction. Cases showing pathological conditions of the nose and throat were 69 per cent improved, as against 68 per cent in the negative cases. The only significant variation was in 55 cases with tonsillar disease which showed an improved rate of 62 per cent. The duration of the immunity produced by an attack of respiratory disease apparently varies over a wide range. A repetition of the maximum dose of vaccine at intervals of 30 to 60 days throughout the season of the prevalence of colds would probably increase the percentage of favorable results.—James M. Adams. *South. M. J.*, 22: 354–356 (Apr.), 1929.

Gall Bladder Operative Mortality—The medical report of 1927 for Garfield Memorial Hospital, Washington, D. C., shows that 169 operations by 23 operators were performed on the biliary tract. Of these operations, 8.8 per cent were fatal. Two of the operators performed 77 of the total operations, with a mortality of 5.1 per cent, as compared with 15 occasional operators whose death rate was 11.5 per cent. For the years 1926 and 1927 the total was 302 operations with a mortality of 6.9 per cent. The mortality rate for the individual operators varied from 1.6 to 28 per cent for the 2 years, giving evidence of some difference in methods used. A study of the charts of the fatal cases suggests that but 3 of the 21 could be classed as plainly unavoidable. In 3 others death may have been due to errors in technic. In 6 cases, death could be attributed definitely to poor judgment, and in 7 there was unquestionably an error in technic. In the last 2 there was error either of judgment, technic, or both.—J. Russell Verbrycke. *South. M. J.*, 22: 452–455 (May), 1929.

PUBLIC HEALTH ENGINEERING

ARTHUR P. MILLER, C. E.

CHLORO–PHENOL TASTES AND ODORS IN WATER SUPPLIES OF OHIO RIVER CITIES*

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FOR several years past, and particularly since the war, tastes and odors of such a nature as to identify them with the presence of phenols and allied substances, have been experienced with varying frequencies in water supplies of cities located on the inland waterway systems of the middle-western and eastern portions of the United States. Tastes of a similar nature have appeared in water supplies located in other areas, both of this country and Europe. In no instance, however, has this difficulty been more serious or affected larger groups of population than in the area adjoining and tributary to the upper portion of the Ohio River, which drains a highly industrialized region serving as a center of the coal, steel and allied industries.

A search for the specific causes of the tastes and odors above described revealed the fact that during and since the war period the coke producing industry has been abandoning the use of the older "bee-hive" ovens for burning coke and has been substituting for them modern by-product plants, from which valuable substances are recovered from the gases which formerly went to waste in the atmosphere. The residues from some of these recovery processes, notably those concerned with the manufacture of benzol and ammonia, have been found to contain very considerable amounts of tar, phenols, cresols, creosotes, and similar substances, which, when discharged into sources of water supplies, produce characteristic "medicinal" tastes and odors in them which will be designated hereafter by the single term, "phenols." Although other classes of wastes, notably those derived from producer-gas plants, have been found to contain phenols and like taste producing substances, the relative total amounts of phenols resulting from the operation of coke by-product plants are so much greater than those produced by any other single industry, and their production takes place in such highly concentrated areas, that a large share of the responsibility for the difficulties caused by wastes of this class logically has been attributed to them.

In the upper portion of the Ohio River basin and especially along the Ohio River proper, the situation has been aggravated by the fact that in order to produce bacterially safe effluents for drinking purposes, municipal water purification plants are forced to resort to continuous chlorination of the water in addition to its coagulation, sedimentation and filtration. This condition is

* Discussion of Disposal of Phenol Wastes, by F. Holman Waring, presented before the Public Health Engineering Section of the American Public Health Association at the Fifty-seventh Annual Meeting at Chicago, Ill., October 18, 1928. *A. J. P. H.*, 19, 7: 758 (July), 1929; Discussions, 19, 7: 817 (July) and 19, 8: 901 (Aug.), 1929.

due primarily to the large volumes of untreated sewage being discharged into this river system. The addition of chlorine to water containing small amounts of taste producing phenols has been found to intensify the tastes caused by these substances, probably owing to the formation of chloro-phenol and allied compounds which are known to have exceptional taste producing properties.

In March, 1924, a report was prepared by Sanitary Engineer H. R. Crohurst of the U. S. Public Health Service, giving the results of a survey which he made of the water supplies affected by tastes of phenol origin and of the industrial plants producing phenol bearing wastes within the Ohio River basin. In his report, 17 coke by-product plants were listed at that time as discharging wastes of this character into the Ohio and its tributaries. Later reports submitted by the Departments of Health of Pennsylvania, Ohio, West Virginia and Kentucky, at a joint conference held in February, 1926, indicated that about the same number of plants were actively discharging phenol wastes at that time in this river basin.

Systematic records of the appearance of phenol tastes in Ohio River water supplies have been maintained since late in the year 1921 by operators of municipal water purification plants located along the river. These records have been collected by the U. S. Public Health Service from time to time and brought together for comparison. A summary of these records, showing the periods and roughly the relative intensities of phenol tastes observed in Ohio River water supplies, is shown graphically in Figure I, which has been plotted from these records. In this diagram are shown also the approximate locations, with respect to the various water intakes, of coke by-product plants discharging phenol wastes into the Ohio River and its tributaries at intervals during the period 1924 to 1927, inclusive. It will be noted in this connection that of the 17 plants indicated as discharging phenol wastes in 1924, only 4 were given as remaining actual contributors in 1927.* The reduction was brought about as the result of joint efforts by the Ohio River states and manufacturers, following conferences held in 1924, 1925 and 1926. The work thus accomplished has been described so fully † that it is unnecessary here to discuss that phase of the subject.

On referring to Figure I, it will be noted that up to the end of the year 1925, tastes of phenolic origin were present at frequent intervals and, during some periods, almost continuously, in the water supplies of East Liverpool and Steubenville, located, respectively, 43 and 65 miles downstream from Pittsburgh, and in those of Ironton and Portsmouth, located 326 and 355 miles downstream from the same point. At Ashland and Huntington, located short distances upstream from the Ironton-Portsmouth zone of the river but about 240 miles downstream from Steubenville, the recorded tastes were considerably less both in frequency and intensity; likewise at Cincinnati, located about 106 miles downstream from Portsmouth. At Louisville, 130 miles downstream from Cincinnati, no tastes of phenolic origin were recorded until December, 1925, and January, 1926, when a wave of these tastes, of unusual intensity, penetrated throughout the entire river down to this point.

Following the December–January phenol wave of the winter of 1925–1926, a renewed coöperative effort was made by the states of Pennsylvania, Ohio,

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* In a recent paper, Waring indicates that in the autumn of 1928, this number had been further reduced to 2 plants, located, respectively, at Wierton and Follansbee, W. Va.

† Waring, F. Holman. Results Obtained in Phenolic Wastes Disposal under the Ohio River Basin Interstate Stream Conservation Agreement, *A. J. P. H.*, 19, 7: 758 (July), 1929.

West Virginia and Kentucky to bring about the elimination of phenol bearing wastes from the Ohio River system. The results of this effort, which left only 4 recognized sources of phenol pollution in the Ohio River at the end of the year 1927, were evidenced, as shown in Figure I, by a well marked diminution in the frequency and intensity of phenol tastes in Ohio River water supplies, the only outbreak of serious proportions during this period occurring in December–January of the winter of 1927–1928. The change in the status of such tastes occurring after the winter of 1925–1926 is further indicated by Table I, showing the months of the years 1924 and 1925, as compared with those of 1926 and 1927, in which tastes of phenolic origin were recorded in the water supplies of various Ohio River cities:

TABLE I

	Total Months in Which Tastes Occurred	
City	*1924–25*	*1926–27*
E. Liverpool	11	4
Steubenville	24	3
Huntington	5	2
Ashland	3	3
Ironton	7	3
Portsmouth	13	8
Cincinnati	2	4
Total	65	27

These figures fail to show the true contrast existing in the prevalence of tastes during the two periods indicated, because they do not take account of the greater intermittency and less intensity of such tastes during the later period. If these factors could be weighed properly they probably would show that a reduction amounting to fully 90 or 95 per cent has taken place since the end of 1925.

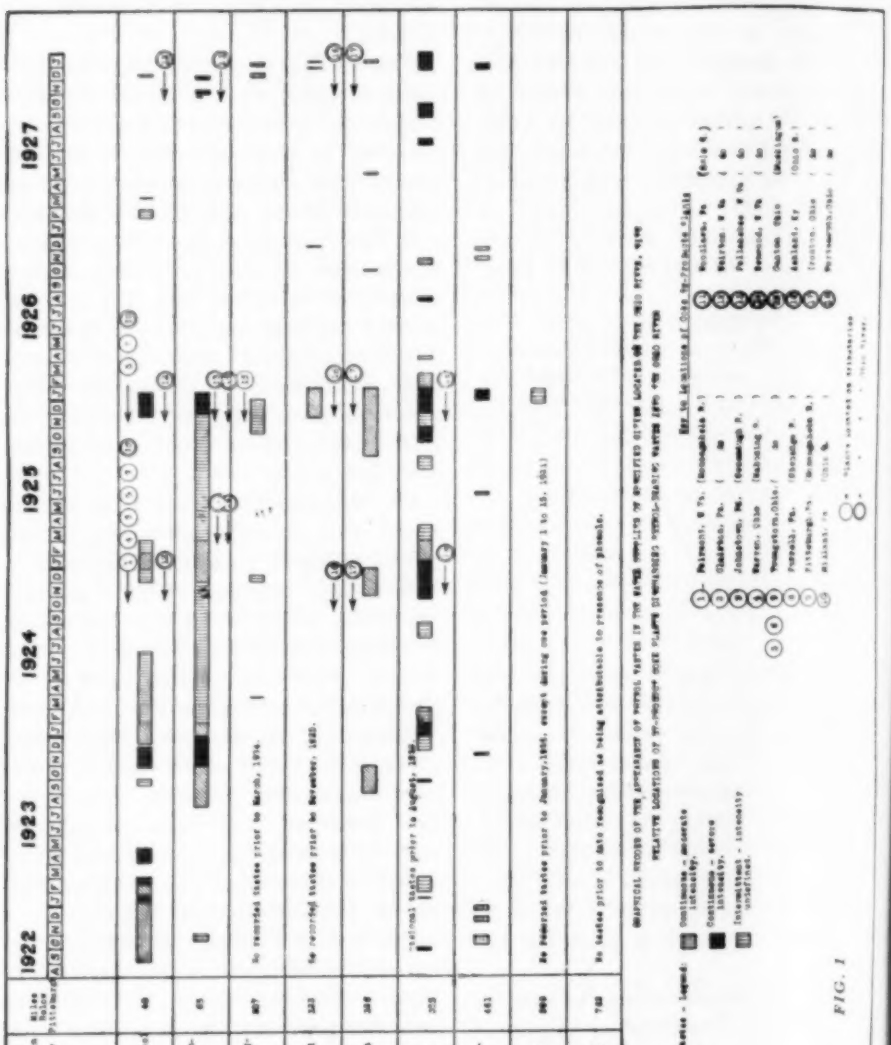
Aside from the foregoing indications, the conditions illustrated in Figure I are of considerable scientific interest in that they afford fairly definite evidence that the concentration of taste producing phenols in the river has had a marked tendency to become progressively reduced in passing downstream, to a greater extent than can be accounted for by increased dilution or by any other wholly physical influence. The evidence at hand sugggests very strongly, in fact, that a large part of the reduction observed is due to some natural process of purification, similar in its general mode of action to other phenomena commonly associated with the self purification of streams.

The tendency above noted is indicated, broadly: (a) by the sharp reduction in the prevalence of phenol tastes observed in water supplies located at considerable distances downstream from sources of phenol pollution, as compared with their prevalence in supplies located in the more immediate vicinity of such sources of pollution, and (b) by the marked seasonal variations in the relative frequency and intensity of phenol tastes occurring in all of the Ohio River water supplies and especially in those further removed from sources of phenol pollution.

On referring to Figure I, it will be noted that during concurrent periods phenol tastes occurred less frequently at Huntington, Ashland, Cincinnati and Louisville, all of which were located at distances of more than 100 miles downstream from recognized sources of phenol pollution, than at East Liverpool, Steubenville, Ironton and Portsmouth, which were located within short distances of such sources of pollution. The reduction observed has been particularly striking between Steubenville and Huntington, a distance of 242 miles, and between Portsmouth and Cincinnati, a distance of 106 miles. In the latter instance the reduction in the frequency of phenol taste prevalence, amounting to over 80 per cent, occurred in a river stretch in which the total amount of dilution water added to the Ohio, mainly through the Scioto River at Portsmouth,

ordinarily is less than 10 per cent. In the former case, it likewise could be shown that the reduction experienced in the prevalence of phenol tastes was far greater than would be accounted for in terms of added dilution water.

It will be noted in Figure I that although phenol taste producing substances penetrated throughout the Ohio River as far as Cincinnati on several occasions during the winter and early spring, they did not appear during the summer or early autumn at any of the cities removed by any considerable river distance from points at which phenol wastes were discharged into the river. If dilution were a material factor in these variations, their trend would be expected to be exactly the opposite of that actually observed, as the maximum



dilution provided by the Ohio River occurs in the winter and early spring, when the river usually reaches its highest discharge.

Although no data are at hand concerning the seasonal trend of production of phenolic wastes by coke by-product plants, it hardly would appear, from the nature of the industry, that such wastes could be produced in sufficiently greater volumes during the winter-spring season, as compared with the summer-autumn period, to account for the wide seasonal variations above noted.

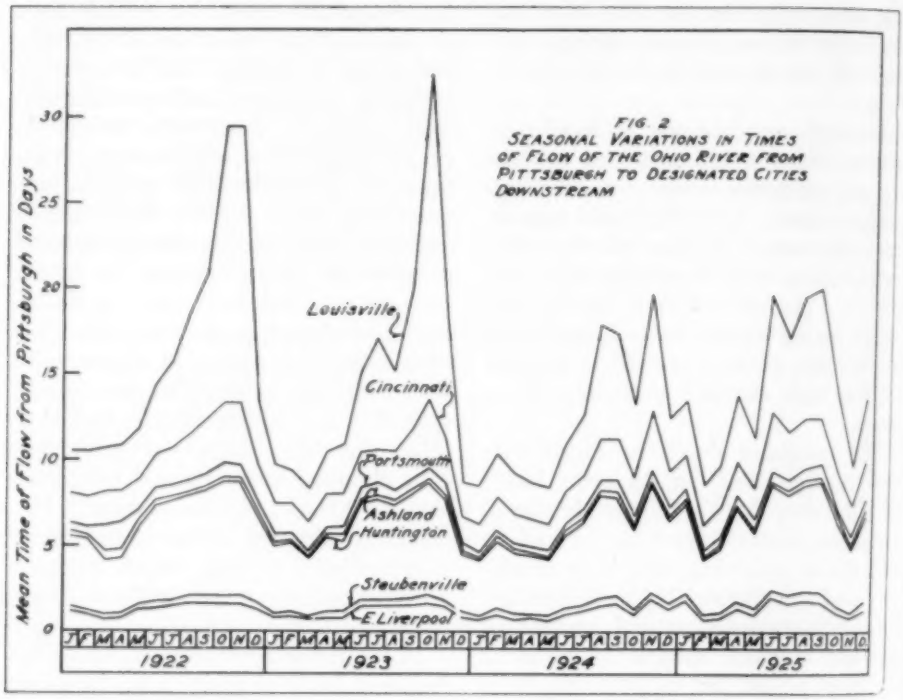
The condition shown in Figure I is entirely consistent, on the other hand, with the view that the changes in phenol tastes prevalence observed in the various Ohio River water supplies, both seasonally and geographically, have resulted largely from some natural process of purification which, though limited in its degree of action, like all other processes of stream self purification, is sufficiently powerful to bring about a marked progressive reduction in the concentration of phenols in stretches of the river relatively undisturbed by pollution of this character. Thus it is noted that the maximum reduction has occurred during the summer and early autumn seasons when the Ohio River usually reaches its lower stages and the effect of longer times of flow, as illustrated in Figure II, is accentuated by that of higher stream temperatures. In general, the periods in which evidences of phenol pollution, as gauged by the appearance of tastes in water supplies, have penetrated to the downstream points far removed from the sources of such pollution, have occurred coincidently with shortened times of flow, as indicated in Figure II, and with relatively low stream temperatures, both of which conditions tend in general to bring about reduced natural purification effects in streams.[1]

In the foregoing connection, reference may be made to recent studies by Mohlman[2] and his associates, which have shown that the oxidation of phenols, which can be accomplished by ordinary biological processes of sewage treatment when phenolic wastes are mixed in proper proportions with sewage, is essentially a biochemical phenomenon, proceeding along definite time-function curves at rates varying closely with the temperature, being greater at higher temperatures, and *vice versa*. As the behavior of phenols in the Ohio River has been consistent, except in degree, with their reactions to artificial processes of oxidation, it would seem quite logical to infer that the progressive reductions thus observed under natural conditions may be due to a process of natural biochemical oxidation similar in its general characteristics to that which proceeds more intensively under artificial conditions.

If the foregoing theory is correct, its lesson is fairly obvious, in so far as its application to problems involving the elimination of sources of phenol pollution of water supplies is concerned. In cases in which water supplies are subject to continuous or frequent pollution by phenols, the important sources of such pollution are more likely to be found in the vicinity of the supply than at any considerable distance.

If, however, they are subject only to occasional pollution, occurring more especially during the colder season or, in streams, coincidently with high river stages, the source of the trouble probably is located at a more distant point.

In undertaking any general program of remedial measures, looking to the relief of phenol pollution of water supplies located along an entire stream, the maximum immediate benefit of such measures probably will be attained by eliminating, first, all sources of phenol pollution located directly on the stream in question or in the lower reaches of tributaries discharging into the main stream above the points at which the



water supplies affected are located. The history of phenol tastes in Ohio River water supplies, both during and following the institution of progressive remedial measures by the bordering states, has afforded an interesting confirmation of the principle stated, as is indicated in Figure I.

The effectiveness with which the pollution of Ohio River water supplies by phenol wastes has been brought under a large measure of control within the comparatively short period of time intervening since the year 1925 constitutes one of the brightest pages in recent sanitary history. Accomplished, as it has been, without any coercive legislation, but through the medium of coöperative effort by the federal and state governments and the industries concerned, it augurs well for the future solution of some of the larger problems of stream pollution now confronting the nation.

Although pollution of the Ohio River system by phenol wastes has not been completely eliminated, as evidenced by occasional "spills" which have occurred during the past year or two, it has been curbed to such an extent as to justify the expectation that in the near future it will cease to be a major problem along this important waterway. A generous measure of credit is due to those whose joint efforts have brought about this fortunate result.

REFERENCES

1. See *Pub. Health Bull. No. 143*, pp. 298-335; *Pub. Health Bull. No. 171*, pp. 179-199; *Pub. Health Rep., Reprint No. 1063*, pp. 31 and 45; also *Reprint No. 1232*, pp. 9-13.

2. Mohlman, F. W., The Biochemical Oxidation of Phenolic Wastes. *A. J. P. H.*, 19, 2: 145 (Feb.), 1929.

INDUSTRIAL HYGIENE

EMERY R. HAYHURST, M. D., AND LEONARD GREENBURG, PH. D.

Heating and Ventilation of Liverpool Cathedral—While the first structures including the Lady Chapel, Vestries, etc., of the new Cathedral, begun about 20 years ago, were arranged to be heated by a system of warm air and hot water, the plan for the rest of the immense structure, which, when finished, will be the largest in England and the next in size to St. Peter's at Rome, is to be heated by a new system known as a "warm floor." The system however was used by the Romans as may be seen in the baths at Bath, and the baths at Caracalla at Rome.

Almost the entire floor space consists of a double floor, enclosing a system of shallow ducts. The same air is circulated continually by means of a ventilating fan located in the basement and a hot water coil to raise the temperature to about 80°. Thus the floor becomes an immense radiator, although its temperature is considerably below blood temperature, and for this reason does not feel warm to the feet.

There will be no drying of the air of the Cathedral; heat will be evenly distributed and down draughts prevented; there will be no admixture of the heated air with that of the room space; fresh air for ventilation will be provided otherwise; neither the floors nor the walls will be obstructed by heating devices with their consequent staining effects; and heat will be uniformly distributed also at various levels above the floor, thus providing for "cool heads and warm feet."

The heating system will be put into operation as soon as the basement is finished, so that construction of the building may proceed to completion avoiding the damage which often occurs to joinery and fittings due to weather conditions. While the initial cost is a little greater, the low temperature maintained provides for an unusually economical working. The system is adaptable to houses, churches and halls. —Sir Giles Gilbert Scott, R.A., Architect, G. N. Haden and Sons, Ltd., engineers, Trowbridge, England, 27 pp., ill. (See also *Liverpool Cathedral, Official Handbook* (3d ed.), July, 1924, pp. 85–87.)

Atmospheric Pollution—The annual report for Rochdale (England) for 1927–1928 continues to emphasize the nature of atmospheric pollution, the chief ingredients being tarry matters soluble in carbon bisulphide, the sulphates, chlorine and ammonia. The main source of these tarry matters is the smoke from domestic fires, where the combustion of coal is less complete than in the furnaces of factories. It is a striking fact that rain brings down the soluble impurities of the atmosphere, but has little effect in bringing down the insoluble matter or soot. The explanation of this selective action of the rain probably lies in the fact that the particles of soluble matter containing hygroscopic salts form a nucleus for the rain drops, while the insoluble matter represented by sooty particles of a tarry nature tends to repel water.

While 4 years previously the average monthly deposit was about 63.5 tons per square mile, the deposit for the current year is but 33.24 tons. This decrease is undoubtedly related to the increase in the use of gas and electricity, as a substitute for coal, as a source of

heat and power. In fact, it is calculated that electric power units now used in Rochdale avoid the consumption of roughly 100,000 tons of raw coal per annum by private plants. Further decrease is to be expected from scientific treatment of raw coal to produce a smokeless fuel.—*Med. Off.*, 1089: 248–9 (June 8), 1929.

Health Leaflets for the Printing Trades—Twelve leaflets are enclosed in a folder bearing the above title. One makes an especial appeal to the employer to provide adequate ventilation, sanitary conveniences, seats and vacuum methods of cleaning; another appeals to the employed to coöperate in maintaining proper ventilation, the use of sanitary arrangements, lockers, canteens, the avoidance of the common drinking utensil, and of spitting; another discusses briefly healthy habits but has the rather surprising statements for the prevention of influenza and common colds—"a simple and yet effective preventive is to draw warm water through the nose, morning and evening," and "all cuts and scratches should be kept scrupulously clean and covered with plaster or other dressing."

The leaflet on the prevention of lead poisoning states that within the last 12 years there have occurred 230 cases (presumably in the Printing and Allied Trades of the United Kingdom) of which number 98 were compositors, 55 stereotypers, 20 linotypers, 14 monotypers, 2 electrotypers and 41 otherwise employed. Of this total, 160 cases occurred in ordinary letterpress printing, and 70 in newspaper works. The cases occurred in 185 plants.

The leaflet entitled "Precautions against Consumption" advises that in sedentary occupations the most suitable temperature for a workshop is from 60° to 65° F. One leaflet is devoted to ventilation and health; another to the dangers of bronzing with the claim that bronze dust appears to render workers very susceptible to diseases of the respiratory organs, such as pneumonia and pleurisy. A 4-page leaflet is devoted to good lighting of printing offices; a similar one to the dangers of defective eyesight, this prepared by W. B. Barker, past President of the British Optical Association; and a pamphlet devoted to convalescent homes. In connection with defective eyesight, of 139 employees who were examined by a specialist, 61 were found to require glasses. In another instance, of 134 employees, 86, or 64 per cent, needed glasses or revised prescriptions.—Joint Industrial Council, Printing and Allied Trades of the United Kingdom, 7–10, Old Bailey, London, E.C.4.

Industrial Clinic at McGill University—Dr. Frank G. Pedley, Director, announces that the industrial clinic operated by McGill University in the Montreal General Hospital celebrated its first anniversary in October, 1928. It had a most satisfactory year, having had more than 1,600 people in attendance for examination or treatment. Likewise it stimulated the installation of health service in many industrial plants. It will shortly inaugurate a dental clinic.—*Canad. Pub. Health J.*, XX, 2: 108 (Feb.), 1929.

Tuberculosis in Industry—The Philadelphia Health Council showed that approximately 1.8 per cent of cases of active or suspicious tuberculosis were to be found in small plants, while concerns having well organized medical departments have but 2 to 5 new cases appear per 1,000 employees each year. A definite chest clinic in connection with the medical department is of great value. Arrangements should likewise be made for sanatorium treatment, and fellow workers permitted to visit the sanatorium and, in fact, it is worth while to have one or two employees ac-

company the patient to the sanatorium in order to permit them to spread their impressions when they return.

Unquestionably, arrested cases of tuberculosis should not be put back into strenuous labor nor into any positions where health hazards exist. They should not be permitted to do piecework or any work in which there is an incentive or bonus. With wages and living conditions as they are in the United States at present, the economic status as a cause of tuberculosis has been largely overcome.

In the discussion which followed the above paper, Dr. Sawyer emphasized the necessity of getting all contacts under supervision, especially those in the family. Dr. Garner mentioned a philanthropic industrial plant near New York City manufacturing uniforms and washable goods which employs only recuperatives from tuberculosis.

Dr. L. R. Thompson of the U. S. Public Health Service emphasized that the latest British mortality data point out the unusual importance of tuberculosis as an industrial health problem, the disease being still the greatest cause of death in British industries. Likewise every industry having a high tuberculosis rate has a high death rate from other causes. It is striking to note that those industries which need healthy, strong individuals, such as the steel industry, as a rule, have a low sickness rate and a very low death rate, while less strenuous industries, such as clothing manufacture, have the higher disease rates and death rates.

Dr. Guy L. Kiefer, State Commissioner of Health of Michigan, and a consultant for the telephone company, emphasized that more or less delicate girls appeal to them for employment among whom many are found with a slight rise of temperature and a fast pulse when they apply for work. These are requested to return as often as three subsequent afternoons when, if temperature and pulse readings are not satisfactory, they are refused employment and given advice to consult their physicians or, where they say they have none, they are reported to the Board of Health.—T. Lyle Hazlett, Westinghouse Electric and Manufacturing Co. *Bull. Am. Assoc. Indust. Phys. & Surg.*, III, 1: 2–4 (Mar.), 1929.

Lead—This is Health Practices Pamphlet No. 3 of the new Division of Industrial Health, National Safety Council, 108 East Ohio Street, Chicago, Ill. The pamphlet is a compilation of experience, and should not be confused with official or insurance requirements. The more dangerous lead trades are specified as well as the commoner lead compounds. The toxicity of lead compounds is briefly discussed with a paragraph upon the portals of entry into the body and several upon the fate of lead compounds in the body. A synopsis is given of the diagnosis of lead poisoning, the chief clinical manifestations, the distinction between lead absorption and lead poisoning, and particular attention to the prevention of lead poisoning, both as regards the individual employee and his place of employment. A short bibliography follows. Illustrations show the lead line in the gums, wrist drop, stippled red cells and a proper exhaust system for the protection of workers. There is also a special form for employment and periodic examination of lead workers.

The Prevention of Lead Poisoning—The article discusses proper housing and working conditions in the lead industries, and should be consulted by those interested in the subject.—May R. Mayers, *Indust. Hyg. Bull.*, New York State Dept. of Labor, 124 East 28th Street, New York, N. Y., V, 9: 33–34 (Mar.), 1929.

FOOD, DRUGS AND NUTRITION

WALTER S. FRISBIE

Vitamin A in Avocados—A study of the vitamin A content of avocados was undertaken in view of the probability that their method of growth was favorable to the synthesis of this vitamin. The type used was the Calavo, the highest grade of the fruit, and all determinations were made on the fresh fruit. In the preliminary experiment albino rats in cages with raised screen bottoms were fed 3 different diets, normal diet, vitamin-A-free diet, and avocado diet using 5 gm. of avocado daily. The butter in the normal diet was replaced by lard in the vitamin-A-free diet, and was substituted by 5 gm. of avocado pulp in the avocado diet. Growth curves in this experiment showed the presence of vitamin A. Negative controls developed severe ophthalmia which did not appear in animals on either the normal or avocado ration. In the same experiment on younger rats, 30 days old, weighing about 50 gm., the animals were placed on the Osborne and Mendel control diet. All animals were exposed to the direct rays of the sun 2 days a week. Rats were divided into 4 groups: negative control with no avocado and 3 groups respectively 2.5, 5.0, and 7.5 gm. avocado daily. Ophthalmia appeared in about 5 weeks on the vitamin-A-deficient diet, the test diet starting after the development of ophthalmia. All of the controls were dead at the end of the 3d week, but on the avocado diet maintained good growth for 8 weeks. The growth curves would indicate that the quantity of avocado necessary to maintain good growth for the 8th-week period would be less than the 2.5 daily dose. It is pointed out that the high oil content of this grade of avocado was a significant factor.—Leroy S. Weatherby, J. Ellsworth Youtz, and Ruth V. Watson, *J. Home Econ.*, 21: 360 (May), 1929.

The Action of Irradiated Ergosterol in the Rabbit—Previous investigations chiefly on rats as experimental animals have indicated the toxic effect of excessive doses of irradiated ergosterol. This work was undertaken on rabbits weighing 2.2 to 2.6 kg. and the ergosterol administered orally or intramuscularly, in doses from 0.5 to 10 mg. The ergosterol was dissolved in almond oil, and preliminary tests indicated that the minimal curative dose was 1/20,000 mg. compared to the minimal dose of 8 mg. for cod liver oil.

Autopsies were performed on all animals and chemical determinations were made of calcium in the various tissues. The experiment indicated that doses of irradiated ergosterol greater than 1.0 mg. are decidedly toxic to the rabbit whether the drug is given orally or intramuscularly. Autopsies showed considerable calcium deposits in animals receiving more than 2.0 mg. of ergosterol and none in those receiving 1.0 mg. or less. The deposit was centered in the thoracic aorta, the kidneys and the lungs.

Experiments were undertaken to show the effect of the ergosterol on serum calcium and inorganic phosphate. An increase of serum calcium of from 38 to 49 per cent above normal was produced by doses of 2 to 10 mg. of ergosterol. The smaller doses were less pronounced although the tendency was to some increase. Experiments on some of the

animals with hypercalcemia showed that 10 days after the treatment was discontinued the serum calcium returned to the normal level. The effect on the inorganic phosphorus of the serum was not so definite because of the greater normal variations, but it appears that the administration of sufficiently large doses tends to develop the high inorganic phosphorus level.

An experiment was made to determine the effect of irradiated ergosterol on the tissues. Calcium was estimated in the lungs, kidney, liver, gluteal muscle, and spleen. In the latter organ determinations were averaged for the group. This experiment showed an enormous increase of calcium in the kidneys and lungs, but not in the gluteal muscle and liver, indicating a selective action for the irradiated ergosterol. Doses of 1.0 mg. or less apparently effected no increase of tissue calcium.

A discussion follows as to the relation of hypercalcemia produced by the irradiated ergosterol to the tissue calcium.—Maurice I. Smith and E. Elvove, *Pub. Health Rep.*, 44: 1245 (May 24), 1929.

The Vitamin Content of Honey—The literature from 1918 to 1923 reports investigations of honey to determine vitamin efficacy, all of which showed negative results. In view of the progress in vitamin research, the present experiment was undertaken on honey, testing for vitamins A, B, C and D. Two samples of honey were tested, one an English honey and the other of West Indian origin. There is given a description of the English sample of honey, which when extracted contained 84.95 per cent of dry matter and 0.10 per cent of ash.

Vitamin A was determined in young rats 35–40 gm., in separate cases, on a fat-soluble vitamin-free diet. After vitamin A deficiency was apparent 2 gm. daily dose was administered with a series of negative and positive controls, the latter with 3 drops of cod liver oil. Results showed that 2 gm. of honey contained no appreciable quantity of vitamin A. Vitamins B_1 and B_2 wese estimated on 6 groups of rats with various modifications in the basal diet with the 2 kinds of honey supplemented by autoclaved or dried yeast. All animals received 3 to 5 drops daily of cod liver oil. All the animals except those receiving the dried yeast showed little growth and this was true even when an antineuritic supplement was added. It was concluded, therefore, that both samples of honey were deficient in vitamins B_1 and B_2.

Vitamin C was tested on guinea pigs rendered scorbutic on an appropriate diet. The honey administered was diluted with one-third water, with the initial dose of 3 gm. being gradually increased. Results indicate insufficient antiscorbutic potency in the dose given, averaging around 5 gm. Vitamin D was tested on young rats on a rickets-producing diet low in phosphorus, the animals receiving a daily dose of 2 gm. of each of the different honeys. Negative controls and positive controls with 3 drops of cod liver oil were employed for each honey. Both honeys indicated no appreciable amount of vitamin D.—Edward Hoyle, *J. Biochem.*, 23: 54, 1929.

Effects of High Cereal Diets on the Growth of Infants—Growth and development of 1,200 Japanese and 869 Filipino infants in Hawaii were observed during the first 2 years of life. Diet of both races is high in rice and lacks milk, and infants are breast fed. Three hundred and seventy-nine Hawaiian infants were also examined for skeletal development.

A diet abundant in cereal without milk is compatible with a high birth rate, moderate infant mortality and good growth of the offspring during lactation

for the first 5 months of life, when infants are dependent on breast milk alone, if the mother's diet includes suitable, adequate, supplementary food other than milk.

After 6 months, when the infants have reached the age when additional food is needed, the gain in weight is not so rapid as when cow's milk is used as a supplementary food in the diets of infants. The subtropical location provides sufficient ultra-violet rays in the sunlight to give almost complete protection against rickets, which disease is extremely rare and is mild when it occurs.

Carpal centers develop early in infants in Hawaii. The eruption of deciduous teeth occurs early; earlier for the Japanese than for the Filipino infants. Dental caries was rare during this period of dentition. Disturbances of calcification appear to cause delayed dentition during the second year of life, rather than dental caries.—V. B. Appleton. *Am. J. Dis. Child.*, 37: 284 (Feb.), 1929.

Fatal Septicemia in Man Due to Bacillus (Salmonella) Suipestifer—*B. suipestifer* infections in man are not numerous, but it is not unlikely that they occur frequently unrecognized. Confusion as to the identity of the organism is responsible for a lack of accurate knowledge as to the incidence of infections in the past, and this may account for the failure to find more instances of this infection in man.

Jordan separates the organisms of porcine origin into at least three groups, (1) *B. suipestifer*, (2) *B. Paratyphosus B* (porcine), and (3) *B. typhi suis* or *B. suipestifer voldagsen* or *glasser*. The authors believe that the organism here discussed belongs to the first group of Jordan's classification, namely *B suipestifer*.

The authors indicate that this report shows the necessity of considering *B. suipestifer* as an agent in the production of febrile conditions simulating typhoid fever, especially when organisms of the paratyphoid group are isolated from the blood and all agglutinations with stock strains of *B. typhosus* and *B. Paratyphosus A* and *B* fail.

This article reports a fatal human infection suggesting typhoid fever and due to an organism with the cultural and serological characteristics of *B. suipestifer*. No necropsy of the body was permitted. The patient, an Italian stone mason of 46 years, was admitted to the hospital one week after he showed symptoms. During the course of the disease 3 blood cultures were taken; the first on the 10th day of the disease yielded approximately 8 colonies per c.c., the second on the 16th day of the disease about 75 colonies per c.c. and the third, at death, 225 colonies per c.c. The blood of the patient gave a negative Widal reaction with stock strains of *B. typhosus* and *B. paratyphosus A* and *B*. With the organism isolated from the blood, good agglutination occurred to a titer of 10,000. Later, the patient's serum was found to agglutinate *B. suipestifer* in a dilution of 1:5,000. One c.c. of a 24-hour broth culture of the isolated organism was injected subcutaneously in a rabbit and death resulted in 84 hours. Organisms with cultural reactions similar to that of the patient and which were agglutinated by the patient's serum in a dilution of 1:20,000 were obtained from the heart blood of the rabbit. In other rabbits inoculated with this same organism, death resulted from septicemia and the lesions were marked congestion of the lungs, spleen, liver, kidneys and intestines, with focal necrosis of the liver and kidneys.

The cultural reactions of the isolated organism showed them to be practically identical with those of *B. suipestifer*. They were different from *B. paratyphosus A* and *B*, and *B. aertrycke*. By means of reciprocal agglutinin absorp-

tion tests, in addition to the cultural characteristics of the organism and the serological action of the patient's blood with *B. suipestifer*, the relation of the isolated organism to *B. suipestifer* is close enough to establish species identity. Unfortunately, the source of the infection was not determined.—J. T. Bauer, Margaret McClintock, *J. Infect. Dis.*, 44: 292 (Apr.), 1929.

Intramuscular Infection of Guinea Pigs with Spores of Cl. Botulinum—Evidence is given that with formalin as a tissue debilitant, approximately 25 viable heated spores of *Cl. botulinum* inoculated into the muscles of guinea pigs may grow luxuriantly and produce a potent toxin, and that *Cl. botulinum* sporulates readily in the debilitated tissues. Six-tenths to 0.8 c.c. of 10 per cent formalin (40 per cent) was the debilitant used. Using the same procedure, attempts to infect a series of laboratory rats with spores of *Cl. botulinum* were unsuccessful. Additional attempts to infect rats using saponin as the tissue debilitant also were unsuccessful. These unsuccessful attempts indicate the presence of antispore substances in the rats or failure to produce sufficient tissue necrosis, the author favoring the latter explanation.

No data are given as to the conditions necessary for growth of *Cl. botulinum* spores in the body; however, the author suggests that from the work of Coleman and Meyer (closed vein and eye culture) a condition of stasis as regards fluids in an organ and also the presence of a medium of necrotic and coagulated tissue may be favorable to spores' development.

The author also discusses the practical significance of his findings in regard to human infection by *Cl. botulinum* spores. He gives suggestive data which may have a bearing upon the absence of reported botulism due to war wounds. He also points out that many housewives are in the habit of heating canned goods suspected of spoilage and then consuming them. As some of this food may be a veritable culture of *Cl. botulinum*, the spores of which may not be killed by such heating, its consumption by a person having ulcerations or other severe lesions of the digestive tract might not be without danger; and he cites a Montana botulism outbreak caused by the consumption of soup, presumably heated, which was made from contaminated corn.—George E. Coleman, *Am. J. Hyg.*, 9: 47 (Jan.), 1929.

Development of Vitamin A during Ripening of Tomatoes—California tomatoes plucked from the vines green but mature, were divided into 6 lots as follows: (1) prepared at once, (2) ripened in light, (3) ripened in the dark, (4) ripened in ethylene, 1:2,000 parts for 1 week, (5) ripened in the dark with 3 periods of ultra-violet irradiation, (6) later taken from the vines in ripened condition. All lots were stored in jars with a layer of carbon dioxide with a temperature below freezing to prevent oxidation. Rats 21 days old after development of vitamin A deficiency were fed weighed portions of the tomatoes in addition to 0.5 gm. yeast daily with the basal diet. The experimental period was 56 days. The result showed the development of vitamin A in the ripened fruit compared to the green. There was practically no difference exhibited between the tomatoes vine ripened and those artificially ripened. Further experiments are in progress to determine quantitative relations of the fat-soluble pigments, carotin and lycopin, with chlorophyll, and vitamin A in tomatoes and other plants. It is suggested that carotin and lycopin have a protecting effect in the development of vitamin A in plants when exposed to sunlight.—Agnes Fay Morgan and Laura Lee W. Smith, *Proc. Soc. Exper. Biol. & Med.*, 26: 44 (Oct.), 1928.

CHILD HYGIENE

MERRILL E. CHAMPION, M. D.

JUDGING THE SUCCESS OF A DENTAL PROGRAM

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IT is more difficult to measure success when dealing in terms of healthy childhood than in shares of stock or dollars and cents—difficult, but possible. Child health work is not unlike other projects—it has very definite goals—and while progress cannot be measured quantitatively, certain definite tests can be made to determine its general direction. While measuring rods are being developed that will show the difference between certain types of programs and grade the success of each, is there not some way in which each individual community may judge the success of its efforts? Wherever there are definite objectives, there must be success or failure.

In one phase of the community health program, the dental program, how can a community tell if its attempts to improve the condition of the children's teeth are successful? As realization of the benefits of stock taking on the part of the director and the staff is the first requirement, they must realize that any growing program needs its height and weight measured at regular intervals. It goes back to the fundamental matter of attitudes. The health educator, planning a dental health education program for a group of children, includes the attitudes that they should take toward good mouth hygiene as well as what they should know about their teeth and what they should do in caring for their teeth. Many health workers have overstressed the knowledge and the habits and have not realized that attitudes, intangible though they may be, determine the doing as much if not more than the knowledge.

DEVELOPMENT OF ATTITUDES

National and state organizations, whose privilege it is to guide communities in health matters, should consider the development of good attitudes as a most important part of their programs. Such organizations should determine the desirable attitudes toward community dental programs, and give that information to as many of the health workers as possible.

School dentists, school dental hygienists, and all public health nurses should have a clear conception of what the goals of the dental program are, and the difference between relief work of a temporary nature and corrective work so mixed with education that its benefits are lasting. Communities expect their workers to guide them, as they have the knowledge and training that is fundamental in this work.

All kinds of organizations are asked to assist in the campaign for better teeth and healthier mouths, and it is absurd to expect the directors of lay organizations to have a public health viewpoint in the matter. It is perfectly natural for them, for instance, to consider the ways and means of starting a dental clinic if the school nurse has mentioned repeatedly in her report the number of defective teeth and asked for aid in correcting the situation.

Offering clinic service to worthy chil-

dren is a logical activity of the private organization in question; but should it not consider the whole question—the whole program and its objectives—before laying plans for part of it, with any hope of success?

On the other hand, if an organization has conducted a dental clinic for several years without this preliminary discussion of objectives, is it not perfectly natural for it to measure success in terms of "total number of operations, visits, fillings, extractions and cleanings"? Public health workers are all familiar with annual reports of this kind.

Who is to blame in a situation like this?—A small wealthy community decides to conduct a dental clinic for all its school children; a program is planned, guided by the dental clinician, that is unusually good from the point of view of preventive dentistry. This program is continued for a period of 10 years; the problem of dental caries is practically under control; and the people in that community feel that they have a perfect dental program. They admit in the same breath, however, that they are worried because so few of the high school students take good care of their teeth!

To have all the children with teeth in good condition, saved by the early filling of defective enamel, kept clean, and cared for regularly by the school dentist and hygienist, is indeed success as far as a clinic is concerned; but the tragic part of this program is that the community is so wealthy that there is no need for a clinic. Practically every family could afford to have this work done by a private dentist. It is easier to appoint a dentist, and pay him, out of tax money, a small fraction of what they would have paid him as private patients.

This type of clinic is merely a means of getting dental service at low rates for all parents; it is not a community program, nor is it a public health project.

This may be an unusual case as far as the financial status of the community is concerned, but it is a typical case of the wrong attitude toward a dental program. It is, of course, the product of the era of dental clinics when the objective in everyone's mind was to correct existing dental defects if they were found to be affecting the general health and scholarship of the school children. It is "a menace to the child and an expense to the community."

The dental clinic based on a policy of prevention rather than repair has a very real place in the community dental program of today because practically every community has a certain number of children worthy of clinic care. The dental clinic should no longer be the main objective of the whole program, nor the main consideration when evaluating the success of a program.

Many new attitudes and new objectives concerning dental health work have been developed in the last few years. The communities with programs ten or fifteen years old are slow in adopting the newer point of view, but those communities that are considering the problem for the first time and those that are ever anxious to improve their present programs must consider these new attitudes before further progress can take place. While very little formal work concerning attitudes and objectives for a community dental program has been done, some suggestions are enumerated in the hope of stimulating some thought and action on this subject.

Desirable Attitudes—that should be taken by the community or organization in charge:

1. An interest in determining the objectives of a well rounded community dental program before starting any particular part of it
2. A willingness to develop the most permanent features of the program first
3. An interest in determining the actual needs before starting a dental clinic project
4. A realization that they may need expert advice concerning certain phases of the program

5. A realization that dental care is a personal or a family responsibility

Desirable Objectives—for the program itself:

1. To make available to every mother and father the best known means for caring for the teeth and mouth and preventing dental diseases
2. To teach the school children the care and importance of the teeth; help them to establish habits of regular care; and develop such attitudes as may be necessary for the carrying out of these habits throughout life
3. To determine existing dental defects among school and preschool children each year and notify parents of these defects
4. To correct existing dental defects by
   a. Offering clinic service for needy children
   b. Launching a general campaign to interest parents, dentists and the children themselves in having this work done

Once a community is made to realize the foregoing attitudes and objectives it should be ready to judge the success of its present program. Instead of asking an outside organization to evaluate the work for it, the community should attempt to determine at least some of the facts for itself.

The following list may help to indicate the kind of questions a community could ask itself:

The General Educational Program:

1. Do the average mother and father know the simple facts about teeth—their development and care?
2. What printed material is distributed to the homes?
3. What demonstrations, meetings or lectures have been held to interest mothers in this problem?

The School Program:

1. How many children go to the dentist twice a year? How many children go to the dentist when new teeth erupt?
2. Has dental hygiene a definite part in the health education program in the school?
3. Are good nutrition and regular dental care stressed in the teaching outlines for this subject?
4. How many children have formed the habit of keeping their teeth clean?
5. Do the students in the high school assume the responsibility of caring for their own teeth although helped by a clinic when in the primary grades?

The Dental Clinic:

1. Does the dental clinic serve only the children needing help financially?
2. Does it have a definite preventive policy, caring for the younger children first?
3. Is the amount of service sufficient to care for the poor children in at least the lower grades?
4. Do the parents pay part of the cost of service whenever possible?

Attitudes:

1. Are the children and parents interested in good teeth?
2. Do the parents consider the care of the teeth their responsibility or do they rely on the city for help, whether needed or not?
3. Are the various organizations in the community willing to coöperate with each other in building a well rounded program?
4. Do these organizations ask advice as to the latest methods of conducting dental examinations, dental clinics and other phases of the program?
5. Are they anxious to determine the success of their program so that they may seek to improve it?

A little wholesome introspection of this sort will not hurt any wide-awake community.

The following question summarizes this type of program: Is it wise to teach a child why he should care for his own teeth and interest him in doing so regularly, or is it wiser to care for his teeth for him without even explaining what you are doing? Incredible as it may seem there are many communities today carrying on the latter type of plan, and it is often called "successful."

PUBLIC HEALTH NURSING

MIRIAM AMES, R. N.

Ten Duties for Board Members—The following excerpt was originally presented as part of an address on "Function of Boards of Trustees and Committees," American Nurses' Association Meeting and Institute for Board and Committee Members of Nursing Organizations, Detroit, Mich., April 12, 1929:

1. To know why the organization exists and annually to review why it should exist.
2. To govern a board or a committee through joint thinking, not by majority vote.
3. To give money, or help get it, or both.
4. To face budgets with courage, endowments with doubt, deficits without dismay, and to recover quickly from a surplus.
5. To deal with the professional staff as partners.
6. To keep far enough ahead of the community to be progressive and close enough to it to be practical.
7. To interpret health work to the public in words of two syllables.
8. To deal with physicians on the assumption that the highest ideals of the profession dominate its every member and to face difficulties with recognition that both doctors and board members are human.
9. To be proud of a tradition but eager to improve it.
10. Always to combine a New England sense of obligation with an Irish sense of humor.

—Michael M. Davis, *Am. J. Nurs.*, XXIX, 6: 644 (June), 1929.

Frontier Nursing Service to Extend Territory—Public health nurses who have been fortunate enough to enjoy the hospitality and bring away some of the enthusiasm which abounds in the Kentucky mountains will be particularly interested in the *Fourth Annual Report of the Frontier Nursing Service*. The statement of the present financial status, an appeal for continued support and two objectives for the future are embodied in the brief foreword. Mrs. Breckinridge writes:

> There are two objectives the Frontier Nursing Service asks its supporters to keep in mind—one an immediate objective. We aim to treble our present territory and cover 1,000 square miles within the next four years. This will give us the statistical data Dr. Louis I. Dublin of the Metropolitan Life Insurance Company, who will tabulate it for us, considers necessary in order to demonstrate adequately that the work of nurse-midwives in remotely rural areas does lower the death rate of women and young children, and raise the general level of health of the population.
>
> Our second objective, once we have proved our purpose on a large enough scale to be convincing, is to raise an endowment which will enable us to carry our work into the length and breadth, height and depth of our American mountain ranges.

Feeding Fifty Folks More or Less—The summer number of the *Dairy Counciler* announces the advent of a new cook book. Not just a commonplace cook book this, with its bright cover and alluring illustrations which fairly make your mouth water, but an extraordinary one, for it caters to the imagination as well as to the palate. It is a compilation of recipes gathered together by Vera Armstead Hamilton, home economics graduate from Kansas State Agricultural College. Miss Hamilton is an experienced cafeteria director and consultant for church dinners and parties.

Public health nurses will eagerly seize upon this recipe book, especially if they are called upon to give advice or plan menus in quantities for home bureaus, community clubs, school lunches, junior clubs or camps.

Copies may be had for distribution from the National Dairy Council, 307 North Michigan Avenue, Chicago, Ill.

Asphyxia in the New-Born—In the June 8 number of the *Journal of the American Medical Association*, there is an article by Dr. Albert Mathieu and Dr. Albert Holman, in condemnation of the harsh and unscientific methods now used to resuscitate the new-born infant with atelectasis. They affirm strongly that the frail little body of the new-born infant is hurt rather than helped by the shocks of rough handling and cold water plunges. The method which they have used successfully and which they describe in detail in this article is based upon the fact that breathing is an involuntary process regulated by the brain center, by which carbon dioxide is given off by the blood and oxygen taken in. Although oxygen is necessary in the tissues and blood to allow the production of carbon dioxide, it is the accumulation of carbon dioxide which acts as a stimulant to the brain center. Asphyxia usually involves both low oxygen and low carbon dioxide content in the blood and tissues.

On this basis, a practical device has been worked out by which carbon dioxide (in mixture with oxygen) may be introduced into the trachea of the infant. The expired breath of the operator produces a satisfactory and convenient supply of carbon dioxide in mixture with oxygen, and a special catheter * with a trap is used, by which obstructive material may be withdrawn from the trachea and the carbon dioxide and oxygen mixture may be introduced.

The method is as follows:

Immediately after birth, the mouth of the infant is cleared of mucus and other superfluous material in the usual way. The baby is then placed on its right side and the cord is cut. If normal breathing does not start up after a short time or if attempts at respiration are evidenced by marked retraction at the costal margins without lessening of the cyanosis, the tracheal catheter is then used to remove any remaining mucus and fluid from the throat. It is then introduced carefully into the trachea and further fluid is withdrawn gently by suction by the operator. The catheter is cleared by blowing through it after its removal from the trachea. It is then re-inserted. The process of introducing the catheter into the trachea is easily learned. The writers state that their method is to have the baby's head supported over the edge of a table. The opening into the trachea is located by the right forefinger and the end of the catheter is guided in carefully under it.

The rate and force with which the operator sends air into the lungs is the most delicate part of the process. The operator should puff very gently about 40 times a minute and this should be kept up as long as the heart beats, until respiration is established. It may be repeated later if respiration fails again. It is extremely important that the baby's body heat be maintained through the entire process.

This method has given excellent results but, of course, does not work in cases of brain injuries and congenital deformities.—Dr. Albert Mathieu and Dr. Albert Holman, Resuscitation of the Asphyxiated Newborn. *J. A. M. A.*, 92, 23: 1917 & 1918 (June 8), 1929.—K. E. P.

Dedicated to Higher Education among the Colored Race—Of noteworthy significance was the statement made on June 19, 1929, when the Lincoln School for Nurses in New York City dedicated the new building to "its high purpose for the advancement and progress of scientific medicine among the colored race."

NEW PROGRAM OF HIGHER EDUCATION

In considering the future of Lincoln School as a center of higher education, 2 factors are outstanding: 1. The growing demand for its graduates as the health problems of the negro population

* The catheter is made by V. Mueller & Company, Chicago, Ill.

become more complex and more urgent. 2. The need, on the part of the graduates themselves, for positions of more responsibility, that they may utilize their training to the utmost and also develop their own latent capacities for leadership among their people.

To meet this twofold problem—Lincoln School for Nurses has adopted the following program as a guide to its activities in the immediate future. Details of this program will be carried out as rapidly as facilities, including financial resources, are available.

1. *Lincoln will coöperate with other movements organized to study and meet the needs of the negro population, especially those related to health*—It will make an intensive study of negro communities in the north, with the purpose of determining their need for nursing service.

2. It will expand its training of negro women by

(a) *Adding public health training.* All students will have four months' training along this line to include special work in the dispensaries, bedside nursing in the homes of patients from the wards and dispensaries, work in a communicable disease hospital, and field work in the Social Service Department of Lincoln Hospital and Henry Street Settlement. This training will be supplemented by *a course in principles of public health at Teachers' College.* Every effort will be made to develop qualities of leadership through this training.

(b) *Graduate courses in public health,* surgical nursing, pediatrics, midwifery, contagious diseases, administration. Scholarships will be provided for a limited number.

(c) *Effort to raise the standards of nursing education* in general, in the Lincoln School and other negro schools.

3. *Lincoln also proposes to develop a national placement service* for negro nurses, beginning with its own graduates This will include the development of opportunities such as the temporary subsidizing of a nurse in a needy negro community.

4. *An advisory service for negro nurses will be established* to aid them in securing training, in improving living conditions in positions held after graduation, and in other problems incident to their profession.

5. *Lincoln will invite affiliation with schools where training and experience are limited,* so that their picked students may take the last six months of their course at Lincoln.

Lincoln School is in a strategic position to carry out this program in full, because of its advanced equipment, its prestige as an institution of higher education and the standing of its graduates. Its association with Lincoln Hospital will be of increasing value, as the facilities of the hospital are enlarged according to present plans.

ERROR IN PUBLIC HEALTH NURSING PROGRAM

Through an error, the Thursday luncheon and afternoon sessions of the Public Health Nursing Section were listed in the Preliminary Program in the July JOURNAL (page 804) as closed sessions. These sessions, as well as all other meetings of this Section, are open sessions.

BOOKS AND REPORTS

Medicine. *Its Contribution to Civilization—By Edward B. Vedder, M.D., F.A.C.S. Baltimore: Williams & Wilkins,* 1929. 398 pp. Price, $5.00.

In the downpour of books on medicine and hygiene intended for the general reader, this one is somewhat "different." Not only is it couched in good language, but it is readable, the author possessing a subtle humor which frequently crops out, adding spice to the knowledge which is being imparted. One finds in this volume an accurate survey of what medicine has contributed to the world without any of the whoop and hurrah which too often accompanies such information, and without any of the misleading slogans which some of our boards of health have adopted.

While well balanced, it strikes us that Chapters I and VIII are particularly valuable, the first on the Causes of Disease, Predisposition, etc., and the last on Modern Preventive Medicine, which gives the story of the U. S. Public Health Service, and tells us what is going on. Curiously enough the average person accepts what is being done without any interest in knowing where it comes from. The reviewer is fond of asking students to whom they should apply for information on health subjects, or help along certain lines. Many of them do not even know that there are state boards of health, and except for the volumes of overheated air which emanate from Washington, many of them would never have heard of our Capital. We can hardly blame the average citizen for not knowing that Washington can furnish some real information, and that in the matter of health, it is the headquarters of the largest and best trained body of sanitarians in the world.

The book is beautifully printed, and can be heartily commended. A book of this type makes a reviewer feel that life is not simply a dreary drag of one thing after another. M. P. RAVENEL

Report of Fourth International Congress of Military Medicine and Pharmacy—*By W. S. Bainbridge, Commander M. C. F., U. S. Naval Reserve. Menasha, Wis.: George Banta,* 1927. Cloth. 248 pp.

The International Congress of Military Medicine and Pharmacy is assembled biannually for the purpose of collecting and standardizing methods employed in the prevention and treatment of disease and in the care of the sick and wounded in war and peace. The Fourth Congress was convened in Warsaw, Poland, on May 30, 1927, under the Presidency of General Stanislaw Rouppert, Surgeon General of the Polish Army. About thirty nations were represented. The United States delegation consisted of 5 medical officers, all of whom were members of the Reserve Corps of the Army or of the Navy.

The report as prepared by Commander Bainbridge is principally a compilation of official documents and communications presented to the congress on the subjects of Evacuation in Moving Warfare, The Etiology and Prophylactic Treatment of Influenza, and The Arsenobenzol Chemical Methods of Analysis and Estimation. Naturally, these subjects are considered from the viewpoint of military medicine, but contain much data of interest to those not directly concerned with military affairs. The papers dealing with influenza are good and

have a distinct public health interest. The reports on Evacuation in Moving Warfare should prove of value to students of the military phases of military medicine. The report contains a number of illustrations showing groups of delegates and views, most of which have not even the vaguest connection with the subject matter of the report. It is perhaps unfortunate that illustrations pertaining to military medicine as practiced in countries other than the United States were not used in lieu of some of those given in this book.

G. C. DUNHAM

Your Eyes and Their Care—*By Edgar S. Thomson, M.D. New York: Appleton.* 175 pp. Price, $1.50.

This little book is written with the hope of removing the disadvantages due to lack of understanding on the part of the usual uninformed person suffering with eye trouble. The aim is to give sufficient information that such a person may best coöperate with the eye physician. Dr. Thomson has admirably covered the subjects of anatomy and physiology without using too many technical terms. He gives the lay reader clear knowledge of what part of the eye is at fault, when the individual is nearsighted, farsighted, or astigmatic.

More such volumes from the hands of competent ophthalmologists will tend to offset vicious teaching now so common, particularly those misleading statements of charlatans that eye exercises improve vision of the nearsighted eye. Dr. Thomson makes clear that there is no inherent power to cause shrinkage or shortening of the globe which has already grown too long.

The frank discussion of squint is refreshing to lay people and commends itself to public health workers who are continually obliged to upset the teaching of old-fashioned doctors and of old-fashioned grandmothers about outgrowing squint (cross-eyes). This book emphasizes the fact that squint must be treated in the developmental period, that is, long before school age is reached.

Finally, public health workers will be pleased with Dr. Thomson's fine presentation of the relationship between malnutrition and disease of the eyes. Public health teachers have only begun careful observations in this field and it is well that an able clinician should lead the way in setting us right in his field.

A good deal of comfort will be afforded the sufferer with glaucoma or cataract by reading the chapters on these two subjects.

B. FRANKLIN ROYER

Dunn's Food and Drug Laws. Supplement January 1, 1929—*By Charles Wesley Dunn. New York: United States Corporation Company,* 1929. 228 pp. Price, $2.00.

Two-thirds of this paper bound supplement to the 3 volumes of *Dunn's Food and Drug Laws* are devoted to federal laws and regulations pertaining to foods and drugs, which were adopted during 1928, while one-third contains the new state laws and amendments of Alabama, District of Columbia, Louisiana, Massachusetts, Mississippi, New Jersey, New York, Rhode Island, South Carolina, and Virginia.

The volumes to which this is a supplement were reviewed and highly recommended in these columns in June, 1928.

J. A. TOBEY

The Writing of Medical Papers—*By Maud H. Mellish-Wilson, Editor of The Mayo Clinic Publications. (3d ed. rev.) Philadelphia: Saunders,* 1929. 184 pp. Price, $1.50.

The third edition of this book, the first of which appeared in 1922, under the name of Maud H. Mellish, will be welcomed. It has won its place as a standard. This latest edition has been increased in size, chiefly through addi-

tions to the list of medical journals and the abbreviations which should be used for them in references.

There are some inconsistencies to which attention must be called. On page 13, we are advised to "Use only English words and phrases," yet on pages 18 and 19 some 130 words and phrases, chiefly Latin and French, are given to show which are generally italicized, and which are not.

There is little question that words and phrases from foreign languages are often used in an attempt to show learning which has little existence in fact, and the advice to avoid such terms in general is good. However, some of them have become incorporated into our language, largely for the reason that there is no exact translation for them.

The section devoted to Standard Abbreviations for Medical Journals shows a number of inconsistencies as well as omissions. For example, the *American Journal of Physiology,* the *American Journal of Psychiatry,* and the *American Journal of Psychology* are incorrectly arranged. The *Clinical Journal* is placed below *Clinical Medicine,* as well as several others which it should precede. There are certain inaccuracies in abbreviations, as "Mental Hygiene," and "Jour. Ment. Pathology." The giving of "Mental" in full is not uniform with the *Quarterly Cumulative Index Medicus,* in addition to being inconsistent with the author's plan. The *New England Journal of Medicine* is still given as the *Boston Medical and Surgical Journal,* while no mention is made of the fact that *The Nation's Health* has been combined with the *American Journal of Public Health.* Among the omissions noted are *Physiological Zoology, American Journal of Science,* and *Journal of Nutrition.*

The book is well printed, and will doubtless hold its well earned position.

M. P. RAVENEL

Four Centuries of Medical History in Canada—*By John J. Heagerty, M.D., D.P.H. Toronto: Macmillan,* 1928. (2 vols.) 395 and 374 pp. Price, $12.00.

The author has rendered a distinct service, not only to Canada but to the medical profession in general. However localized history may be, it must contain lessons for the world in general, and the present volumes are full of material of wide interest.

The medical history of Canada goes back to the days of Francis I. The narration is unusually exact and well documented, since the Jesuit missioners kept daily records with meticulous care, which were sent to headquarters in France. The author has given us a picture not only of the early struggles of the French colonies centered particularly around Quebec, but also the development of medicine, surgery and public health in the various provinces, including Newfoundland, and the cities of the Dominion of Canada.

The first volume gives an account of the epidemic diseases—many brought in by the immigrants in ships which were overloaded and inconceivably lacking in the ordinary conveniences and decencies of life. We have an illuminating discussion of these epidemics, to which various names were applied. It seems clear, however, that yellow fever was one of the common scourges which went under the name of "ship fever," though the term included typhus, typhoid, plague, leprosy and smallpox, brought from Marseilles where disease was common and from which many of the ships set forth for the French settlement of Quebec.

Another chapter deals with what was known as the *mal de la Baie St.-Paul,* the exact nature of which remains unknown, though the evidence is strong that it was syphilis widely disseminated extra-congenitally and in a form not known today.

Particularly touching are the accounts of smallpox among the Indians, and the courage of the priests who ministered to them.

The development of medical journalism, beginning with the *Quebec Medical Journal* in 1826, holds especial interest; but less than the foundations of medical schools, the first of which had its origin at the Montreal General Hospital in 1822; or hospitals, the earliest of which was instituted at Quebec in 1639.

There are many points of interest which the reviewer would like to stress, and would like especially to honor by name the pioneers who founded medicine in the new dominion, and those others who through 400 years have not only sustained the fair reputation of the profession, but have greatly extended it.

However, such books do not lend themselves easily to review. We can only advise that they be read, with the assurance that they have been written not only conscientiously, but with literary skill.

The printing and make-up are good.

M. P. RAVENEL

BOOKS RECEIVED

THE WRITING OF MEDICAL PAPERS. (3d ed.) By Maud H. Mellish-Wilson. Philadelphia: Saunders, 1929. 184 pp. Price, $1.50.

HYGIENE OF THE MOUTH AND TEETH. By Thaddeus P. Hyatt. Brooklyn: Brooklyn Dental Pub. Co., 1929. 64 pp. Price, $1.00.

DEVILS, DRUGS AND DOCTORS. By Howard W. Haggard. New York: Harper, 1929. 405 pp. Price, $5.00.

IN TRAINING FOR HEALTH. By C. E. Turner and Jeanie M. Pinckney. New York: Heath, 1929. 151 pp. $.72.

SCIENCE AND THE WAY TO HEALTH. By J. Mace Andress and Maud A. Brown. New York: Ginn, 1929. 367 pp. Price, $1.00.

A HISTORY OF THE MEDICAL DEPARTMENT OF THE UNITED STATES ARMY. By Colonel P. M. Ashburn. New York: Houghton Mifflin, 1929. 448 pp. Price, $5.00.

SUNRAYS AND HEALTH. Every Day Use of Natural and Artificial Ultraviolet Light. By Ronald Millar in collaboration with Dr. E. E. Free. New York: McBride, 1929. 124 pp. Price, $1.50.

AT HOME AMONG THE ATOMS. By James Kendall. New York: Century, 1929. 318 pp. Price, $3.00.

NUTRITION AND HEALTH. (6th ed.) Helen Rich Baldwin. New York: The Borden Co., 1929. 107 pp. Apply.

STEPHEN HALES, D.D., F.R.S. An Eighteenth Century Biography. By A. E. Clark-Kennedy. New York: Macmillan, 1929. 256 pp. Price, $6.00.

YOUR NOSE, THROAT AND EARS. Their Health and Care. By L. W. Oaks and H. G. Merrill. New York: Appleton, 1929. 167 pp. Price, $1.50.

CLINICAL ASPECTS OF VENOUS PRESSURE. By J. A. E. Eyster. New York: Macmillan, 1929. 135 pp. Price, $2.50.

NURSING MENTAL DISEASES. (2d ed.) By H. Bailey. New York: Macmillan, 1929. 294 pp. Price, $2.00.

MENTAL DEFICIENCY. (5th ed.) By A. F. Tredgold. New York: Wood, 1929. 535 pp. Price, $7.50.

TRAINING SCHOOLS FOR DELINQUENT GIRLS. By Margaret Reeves. New York: Russell Sage, 1929. 440 pp. Price, $3.50.

PROCEEDINGS OF THE FIRST COLLOQUIUM ON PERSONALITY INVESTIGATION. Towson, Md.: American Psychiatric Association, 1928. 102 pp. Price, $1.00.

PRINCIPLES AND PRACTICE OF ELECTROCARDIOGRAPHY. By Carl J. Wiggers. St. Louis: Mosby, 1929. 226 pp. Price, $7.50.

BUILDING THE BABY. By Carolyn Conant Van Blarcom. Chicago: Issued by the Public Service Office of the *Chicago Tribune*, 1929. 144 pp.

CLINICAL LABORATORY METHODS. (3d ed.) By Russell L. Haden. St. Louis: Mosby, 1929. 317 pp. Price, $5.00.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH. D.

Aseptic Nursing—The application of aseptic nursing principles in one infant ward reduced respiratory diseases only 10 per cent over a control ward, and proved of no value in preventing the spread of an outbreak of varicella.

ABRAMSON, H., and BARENBERG, L. H. Respiratory Disorders in Infants. J. A. M. A., 92, 26: 2156 (June 29), 1929.

Malarial Mosquitoes—Problems of Anopheline mosquito control in irrigated regions in the Southwest furnish the basis for an interesting discussion of the malaria danger.

BARBER, M. A., *et al.* Malaria and the Malaria Danger in Certain Irrigated Regions of Southwestern United States. Pub. Health Rep., 44, 32: 1300 (May 31), 1929.

Malaria Transmission—Examinations of mosquitoes 3 days after biting malaria victims treated with plasmochin indicate that the drug is effective in controlling the sexual forms of the malaria parasite. The combination of the drug with quinine, which controls the vegetative forms, is discussed.

BARBER, M. A., *et al.* The Effect of Small Doses of Plasmochin on the Viability of Gametocytes of Malaria as Measured by Mosquito Infection Experiments. Pub. Health Rep., 44, 24: 1409 (June 14), 1929.

Toxoid or Toxin-Antitoxin—Another contribution to the controversy. In the experience of these authors, diphtheria toxoid as prepared by Ramon given in 3 doses is superior to 0.1 L + toxin-antitoxin mixture even when 5 doses of the latter are given.

DICK, G. F., and DICK, G. H. Immunization against Diphtheria. J. A. M. A., 92, 23: 1901 (June 8), 1929.

Smallpox Prevention—A thoroughly British discussion of the subject of vaccination brought up, not because of any possible administrative question, but because of an "uncomfortable feeling that our efforts to control smallpox cannot be relied upon to attain the end to which they are directed" because of the deficiencies of health legislation.

BUCHAN, G. F., *et al.* The Control of Smallpox. Pub. Health, 42, 9: 283 (June), 1929.

"Blood Will Tell"—Examples of family trees of patients are offered as support to the belief that characteristics breed true and exert an inexorable force for good or evil. This includes disease potentialities.

DRAPER, G., *et al.* Studies in Human Constitution. J. A. M. A., 92, 26: 2149 (June 29), 1929.

Appetite Loss in Childhood—Some of the causes, natural and otherwise, for the loss of appetite by children and how the condition should be treated is the burden of this entertaining paper.

GARLAND, J. Appetite Loss in Infancy and Childhood. New England J. Med., 200, 22: 1135 (May 30), 1929.

Constipation and Health—Having heard much about but having read nothing by Arbuthnot Lane, this latest "whole-meal" dissertation—really an exhortation—about constipation was read with great glee. Women will be surprised to learn that it is constipation that makes hair grow *on* their chins and *off* their heads.

LANE, W. A. The Prevention of Constipation. Canada Lancet, 72, 6: 218 (June), 1929.

An **Influenza Epidemic**—An account of an imported influenza epidemic in an isolated community—a university—giving an excellent opportunity to follow its course.

MILLER, F. N. The Influenza Epidemic at the University of Oregon in the Fall of 1928. Pub. Health Rep., 44, 23: 1353 (June 7), 1929.

Poliomyelitis Control—An impartial, well-balanced summary of our knowledge of infantile paralysis giving both sides of the several moot questions associated with the disease.

MORSE, J. L. The Problem of the Control of Infantile Paralysis. New England J. Med., 200, 24: 1246 (June 13), 1929.

Streptococcus Epidemicus—Reporting bacteriologic findings of studies pursued in connection with the Lee, Massachusetts, milk-borne epidemic of septic sore throat.

ROBINSON, E. S., and BECKLER, E. A. Bacteriologic Study of Hemolytic Streptococci from a Massachusetts Outbreak of Septic Sore Throat in 1928. J. Prev. Med., 3, 3: 237 (May), 1929.

Industrial Hazards—Rather superficial consideration of some of the industrial diseases without much about practical preventive measures.

ROLLESTON, H. Industrial Diseases and Their Prevention. J. Roy. San. Inst., 49, 11: 617 (May), 1929.

Longevity—"It is difficult to find much evidence that the average physical constitution in this country today is much more hardy or more enduring than fifty, one hundred, or one hundred and fifty years ago." These words close a Connecticut study of mortality, modern and colonial. Whether *any* evidence was uncovered is not clear, for we must admit a "skimming" of the paper only.

RUSSELL, F. E., and LUCIA, E. L. A Comparison of the Mortality in a New England Colonial Town with that of Modern Times. Am. J. Hyg., 9, 3: 513 (May), 1929.

Irradiated Ergosterol—Administered in large doses irradiated ergosterol proved to be highly toxic to rabbits, a condition not applying to small doses. The inorganic phosphate content of the serum was increased as was the calcium in certain tissues.

SMITH, M. I., and ELOVE, E. The Action of Irradiated Ergosterol in the Rabbit. Pub. Health Rep., 44, 21: 1245 (May 24), 1929.

Tuberculosis Mortality—The conclusion of a study of corrected mortality statistics in New York State is that the trend of rural and urban death rates (1900–1915) was essentially the same. Since the war and influenza epidemic both rates have declined more rapidly, somewhat more so in the cities.

SYDENSTRICKER, E. The Trend of Tuberculosis Mortality in Rural and Urban Areas. Am. Rev. Tuberc., 19, 5: 461 (May), 1929.

Diet and Longevity—The extension of life expectancy is confined to the early ages, little change having been effected in ages 50 and above. The chief influence in prolonging infant lives is nutrition, according to Professor Sherman's demonstrations, which are reviewed for popular consumption.

TOBEY, J. A. Diet and the Duration of Life. Am. Mercury, July, 1929.

Iniquities of Health and Welfare Agencies—"And how often do we find on perusing the yearly reports of a lay organization that much of the funds have been expended in organization work . . . while but a very small percentage . . . have actually been used to alleviate suffering!" Many will want to ask the author; how often? And the endowments dispensing medical charity are well berated, too.

VANDER VEER, J. N. The Evolution of a Health Program. New York State J. Med., 29, 12: 732 (June 15), 1929.

HEALTH DEPARTMENT AND OTHER REPORTS

IRA V. HISCOCK

Pittsfield, Mass.—The 1928 report of this city of 50,100 population shows careful preparation, good printing and progress. The new *Appraisal Form for City Health Work* has been applied and the results are tabulated. The employment of a full-time bacteriologist, continued diphtheria prevention work, and additional milk inspections are among the outstanding activities of the year. There were 4 cases of measles and 24 cases of scarlet fever, with no deaths; and 31 cases of diphtheria with 2 deaths, 1 fatal case coming from outside the city. A crude death rate of 13.0 (resident 10.98), an infant mortality rate of 49.6, and a birth rate of 22.9 are recorded.

Miami County and Troy, O.—The public health staff of the city of Troy and the county of Miami function largely as a unit. It is customary for the two Boards of Health of these districts to hold a joint annual meeting to discuss future plans, to agree upon personnel, and to determine expenditures to be made by each board. The employees thus serving the boards jointly are the health commissioner, clerk, sanitary inspector, a supervising nurse and a staff nurse. In addition, each department employs other personnel for special activities.

Approximately 50 per cent of the school population is protected by diphtheria immunization. During the year, regulations were passed making it compulsory that milk from only tuberculin tested herds be sold in the county. Clinics for examination of children of preschool age were held at each graded school building during the summer, and concentrated efforts were made by the department and the Parent-Teacher Association to secure the attendance of all children due to enter school in the fall. Sanitary surveys of several districts have been made by the Rockefeller Training Station at Greenville.

The estimated population of the county health district was 26,639, and that of Troy 8,172. The county reports a crude death rate of 11.8, and the city a rate of 15.0; while the infant mortality rate of the county was 65.7 as compared with 59.6 for Troy. Gross per capita expenditures amounted to $.37 for the county and $.86 for Troy, while the per capita income from taxation amounted to $.19 for the county and $.36 for Troy.

Scott County, Ky.—In communicable disease control, the 1928 report indicates progress, and it is gratifying to observe the absence of cases of typhoid fever and smallpox during the year. A list of 49 schools indicates 100 per cent vaccination of children in all but one school, and 96 per cent of these were vaccinated. There were 6 cases of diphtheria with no deaths. It is stated that 43 per cent of the school children have been immunized and the work is going forward with a goal of 75 per cent protected before the end of the present school year.

The child hygiene program has consisted of child health conferences, home supervision by a public health nurse and talks to mothers and community groups. Eighteen conferences were held during the year with an attendance of 217. Nutrition classes have been organized in the schools.

San Diego, Calif.—This city with an estimated population of 119,700 reports for 1928 a birth rate of 22.0 and a death rate of residents of 14.2. The principal causes of death were heart disease (431), cancer (257), chronic nephritis (195), pulmonary tubercu-

losis (164), cerebral hemorrhage (123), and lobar pneumonia (116). An infant mortality rate of 48 is noted.

A public safety committee, sponsored by the automobile club, made numerous suggestions for the betterment of traffic and reduction of accidents, among which were the widening of streets, certain changes in the Uniform Traffic Ordinance, the painting of white center lines on all main streets leading in and out of the city, and additional traffic signals.

During the year 2,530 children were immunized against diphtheria, a disease which shows a decrease of 65 in reported cases over 1927, the total reported being 91. Child hygiene work has increased, and 101 welfare conferences were held with an average attendance of 19. Excellent coöperation in school work is received from the Parent-Teacher Association.

Winona, Minn.—An attractive cover, good paper, careful preparation, appropriate headings, and interesting descriptive text characterize this 1928 report of the department of health. A foreword contains the following statement:

> The phrase, "Health is a purchasable commodity," is misleading. Sometimes health lost cannot be regained at any price. The knowledge necessary to conserve health is purchasable, but it must be purchased before health is sacrificed. Healthful living is the finest art of the science of life, placing on the individual an obligation to guard his health by adhering to high moral standards of living, and a responsibility for generations yet unborn.

The milk supply comes from dairies with herds tuberculin tested annually, and physically examined quarterly. Regular inspections are made of dairy barns, equipment, and milk plants. All milk handlers and those handling milking utensils are required to have health examinations. "It is not sufficient to deliver a good quality of milk to the city. The supply must be safe at all times. All milk sold in Winona is properly pasteurized."

It is noteworthy to find in this health department report brief discussions of the importance of ventilation, recreation facilities and child health day. This city with a 1920 population of 19,143 reports for 1928 264 deaths (37 non-resident), 483 births (114 non-resident), 19 deaths of infants under 1 year of age. There were 291 births in hospitals (60 per cent), while 56 were attended by midwives. There were 6 cases of diphtheria with 2 deaths, the first cases reported in the city in over 6 years. Stress is given in the report to the importance of immunization. Commendable work in infant welfare is reported. "Winona has an infant welfare nurse with the ability to coöperate with all of the physicians. By this coöoperation and the proper community interest shown, we may hope to lower materially our 1928 record of 38 per 1,000 live births."

A. I. C. P., New York, N. Y.—The 85th annual report of the New York Association for Improving the Condition of the Poor opens with an attractive child photograph followed by impressive statistics of services under the caption "What your contributions helped us to do during the year." These include 132,076 visits made by visitors and nurses to the homes of the families and to clinics and other institutions and agencies in behalf of families. Some 21,000 visits were made to the association's dental clinics, and 142 families were assisted by the mental hygiene clinic "in an effort to understand and solve their problems."

The report abounds in attractive photographs illustrating effectively the health and welfare activities of the association. It also deserves honorable mention for the interesting descriptive text, appropriate headings and good printing.

NEWS FROM THE FIELD

HAWAII SURVEY

PROF. Ira V. Hiscock arrived in Honolulu June 11 to inaugurate for the Committee on Administrative Practice of the American Public Health Association a survey of welfare work in Hawaii. He was greeted on board ship by a welcoming committee composed of the Secretary of the Chamber of Commerce, the President of the United Welfare Board of Hawaii, members of the Territorial Board, and other prominent persons. The survey, sponsored by the United Welfare Board, will embody a study of public health and social work in all its aspects. Invitations to participate in this appraisal of health work in Honolulu were received from F. E. Trotter, M.D., Territorial Health Officer, and from the Governor of Hawaii. Prof. Hiscock has been assured complete coöperation by all of the leading public and semi-public health agencies and kindred organizations. The field work will probably require from 6 to 8 weeks.

HOUSTON FLOOD MEASURES

FOLLOWING an unusually heavy rainfall on May 30 on the small catchment area of Buffalo Bayou, which meanders through the City of Houston, the main and central pumping plant of the city water supply located on the banks of this stream was completely inundated on May 31. The entire system supplies approximately 300,000 people with an average of 30,000,000 gallons per day and one-third of this comes from the Central Plant.

Quick work on the part of the local officials and sanitary engineers of the State Department of Health and the U. S. Public Health Service brought about immediate shutting off of these units and inaugurating a comprehensive program of rehabilitation and sanitary protection. In the meantime the city system was supplied with water from the 7 outlying pumping stations not inundated by the high water, which were supplemented by numerous private wells interconnected with the system including provision for reasonable pressure for fire protection. An intensive program of cleaning, disinfecting, and laboratory testing was inaugurated and now complete chlorination of all the water is in effect. Little actual damage is recorded due to the high waters in the south Texas area, although some high water records were established.

NEVADA ADMITTED TO U. S. BIRTH REGISTRATION AREA

THE admission of Nevada to the birth registration area was recently announced by the U. S. Bureau of the Census, the bureau tests having shown that birth registration in Nevada is now at least 90 per cent complete. The only states not yet included in the birth registration area are New Mexico, South Dakota and Texas.

STATE AND PROVINCIAL HEALTH AUTHORITIES

AT the 44th Annual Conference of the State and Provincial Health Authorities of North America, in Washington, D. C., May 31 and June 1, 1929, F. E. Trotter, M.D., president of the Territorial Board of Health of Hawaii, was elected *President* for the ensuing year. Other officers elected were: *Vice-president*, E. L. Bishop, M.D., State Commissioner of Health, Nashville, Tenn.; *Secretary-Treasurer*, A. J. Chesley, M.D., Secretary of the Minnesota State Board of Health, St. Paul.

Minn.; and *Field Secretary*, S. J. Crumbine, M.D., General Executive, American Child Health Association, New York, N. Y.

New members of the Executive Committee are Matthias Nicoll, Jr., M.D., State Commissioner of Health of New York, and the retiring president of the organization, and A. T. McCormack, M.D., State Health Officer of Kentucky.

Many members remained to attend the 27th Annual Conference of State and Territorial Health Officers with the U. S. Public Health Service. At this conference, the opening address was delivered by Surgeon General Hugh S. Cumming.

UNIVERSITY OF MICHIGAN

THE University of Michigan, at Ann Arbor, is holding a series of Public Health Institutes week-ends during the summer session, June 21 to July 27, 1929. Some of the lecturers are Marjorie Delavan, John Sundwall, M.D., Henry F. Vaughan, M.D., William DeKleine, M.D., C. C. Slemons, M.D., Lillian Smith, M.D., W. W. Peters, M.D., Louis I. Dublin, Ph.D., and many others.

THOMAS W. SALMON MEMORIAL

ANNOUNCEMENT is made by the Hon. George W. Wickersham, Honorary Chairman of the committee in charge, of the establishment of the Thomas William Salmon Memorial to provide recognition to the scientist who has made the greatest contribution in the fight against mental disease during each year. Awards are to be national and international and will provide for the wider dissemination of the knowledge of mental hygiene and insanity, through coöperation with the New York Academy of Medicine, in whose hands the administration of the $100,000 fund is to be placed.

A series of lectures will be given in various cities of the United States, to be known as the Thomas W. Salmon Memorial Lectures.

The movement was initiated by a hundred and fifty of the leading neurologists and psychiatrists of this country who have associated with them leaders in the mental hygiene movement and in psychiatric social service and nursing fields.

GREENVILLE AND DARKE COUNTY

ON June 6, 1929, Dr. M. E. Barnes resigned as Health Commissioner of Greenville, O. His resignation was presented to the Boards of Health of Greenville and Darke County at their regular meeting.

His resignation brought to a close the coöperation between the local boards of health, the State Department of Health and the Rockefeller Foundation. This coöperation was started in February, 1927, for the purposes of:

1. Developing a local health organization adequate to meet the health needs of a community
2. Expanding this work only to such a stage that the finances of the local boards of health could maintain it indefinitely
3. Using the health work thus organized and developed as a training station for health workers.

As these three objectives have been accomplished, the Rockefeller Foundation is withdrawing from the arrangement.

Dr. Barnes has been transferred to Lansing, Mich., to work with the Michigan State Department of Health. The Rockefeller Foundation is assisting this department in opening ten county health departments, as soon as they can train a staff for the work.

NEW CANCER CLINIC IN CHICAGO

A NEW clinic for cancer research will be opened in July in Chicago under the direction of many eminent doctors, among whom will be Dr. Charles Mayo of Rochester, Minn.

Final plans for the clinic were drafted

by Dr. Herman N. Bundesen, Chicago, and Anton J. Cermak, President of the Cook County Medical Board, who went to Rochester to see Dr. Mayo. The activities of the clinic will be carried out by a research staff to be assigned by Northwestern and Loyola Universities and the Universities of Chicago and Illinois.

DR. AMES NEW PRESIDENT OF JOHNS HOPKINS UNIVERSITY

JOSEPH Sweetman Ames, Ph.D., has been appointed the next president of Johns Hopkins University, Baltimore, Md., to succeed Frank J. Goodnow, LL.D., who becomes president emeritus. Dr. Ames has been connected with the university since his graduation from it in 1886.

EDWARD WILBER BERRY, DEAN OF JOHNS HOPKINS UNIVERSITY

THE new dean of Johns Hopkins University, Edward Wilber Berry, has no degree of an academic nature. He has been professor of paleontology and paleobotany at the university since 1917.

FRENCH HONOR AWARD

DR. Amedee Granger, director of the X-ray department, Charity Hospital, and director of the radiology department, Tulane University, New Orleans, La., has been awarded the gold Palmes Universitaires by the French Government, in recognition of his achievements in the science of radiology. This is the highest university decoration awarded by France and confers the title of officer of public instruction on the recipient.

HEALTH " MEASUREMENTS " IN PHILADELPHIA

THE American Physical Education Association will conduct a test in Philadelphia to " measure " the health of 10,000 school children. The purpose of this survey is to gauge the children's fitness, muscular development, neuromuscular coördination and ability to engage in healthful recreation.

NEW OFFICERS OF DELTA OMEGA

HON. Herbert Hoover, President of the United States, has recently been elected an honorary member of Delta Omega; Surgeon General Hugh S. Cumming and Dr. Frederick F. Russell were also honored in the same way. Dr. Charles V. Chapin is the only other honorary member of this society.

ILLNESS IN NEW YORK

THE Welfare Council, set up with grants from the Laura Spelman Rockefeller Memorial and the Commonwealth Fund, has published the results of a two-year health inventory, which reads in part as follows:

There are in New York City 125,000 to 200,000 persons ill in bed every day, and two to four times as many ill though not incapacitated. Several thousand die each year, many from preventible causes.

The yearly cost of care for the sick—doctors, hospitals, nurses, clinics, drugs, healers and appliances—is $150,000,000. The loss in wages due to absence from work on account of illness is $75,000,000 a year, and there is an even greater loss because of diminished productivity and other results of illness.

New York has 11,000 physicians, 12,000 nurses, 6,000 dentists, and 200 hospitals.

The rating of public health work in New York is 709 out of a possible 1,000 points on the American Public Health Association *Appraisal Form for City Health Work*, but this rating scale was devised chiefly for use in smaller cities and should not be taken as perfect for New York.

Copies of the complete report can be obtained from the Welfare Council of New York, 151 Fifth Avenue, New York, N. Y.

MICHIGAN PUBLIC HEALTH ASSOCIATION

THE midsummer meeting of the Michigan Public Health Association was held July 20 at the University of Michigan, Ann Arbor.

OUR IMMIGRANT FOODS

THE National Dairy Council has prepared an interesting item, showing where some of our food originated. Here is where some of them first came from:

Celery from Germany.
Onions from Egypt.
Pears and apples from Europe.
Spinach from Arabia.
Walnuts and peaches from Persia.
Cucumbers from East Indies.
Quince from Crete.
Radishes from China and Japan.
Peas from Egypt.
Horse-radish from southern Europe.
Ice cream from Italy.

PERSONALS

M. P. RAVENEL, M.D., University of Missouri, Fellow of the A. P. H. A. and Chairman of the Editorial Board of the *American Journal of Public Health and The Nation's Health*, was recently made an honorary member of Phi Beta Kappa at The University of the South, Sewanee, Tenn

DR. EMMET F. CASEY has been appointed health commissioner of the village of Hillside, Ill.

DR. WILLIAM H. WELCH has resigned from the State Board of Health of Maryland after 31 years of association with it. Dr. Thomas S. Cullen has been appointed by the governor to take Dr. Welch's place.

DR. CURTIS H. LOHR has been appointed hospital commissioner of St. Louis, Mo., to succeed Dr. J. W. Shankland.

DR. THEOBALD SMITH retired on June 30 from the directorship of the department of animal pathology of the Rockefeller Institute for Medical Research. Dr. Carl Ten Broeck became the acting director in his place.

MRS. SIDONIE MATSNER GRUENBERG, director of the Child Study Association of America, sailed on June 7, to attend the Home and School Conference in London held June 28 and 29.

ARTHUR B. EMMONS, 2D, M.D., has recently become Executive Director of the Boston Metropolitan Chapter, American Red Cross, 45 Newbury Street, Boston, Mass.

DR. SHERMAN S. KATHAN, of Conklingville, N. Y., Health Officer of the Townships of Hadley and Day for twenty-five years, died in the Albany Hospital on May 12. He was the only physician in Conklingville.

DR. WILLIAM J. FLEMING, Health Commissioner of Troy, N. Y., since January, 1928, died on May 19.

GROVER A. WHALEN, Commissioner of Police of New York, N. Y., addressed the public over the radio on June 8 on "Enforcement as an Aid to Safety."

MAGNUS W. ALEXANDER, president of the National Industrial Conference Board, New York, N. Y., sailed for the Netherlands, to address the Fifth General Congress of the International Chamber of Commerce at Amsterdam, Holland, July 9.

GEORGE A. SOPER, PH.D., Consulting Sanitary Engineer, sailed on June 22 for Liverpool, England, to investigate the organization, methods and apparatus used by foreign cities in the collection and disposal of wastes. He will visit England, France, Germany, Austria and Italy.

DR. JAMES H. FLYNN was appointed Health Commissioner of Troy, N. Y., to succeed Dr. William J. Fleming, who died recently.

ALBERT L. MORGAN, Health Officer of Dexter, N. Y., for over 35 years, died on May 19.

IVAN C. WELD, Secretary-Treasurer of the International Association of Dairy and Milk Inspectors, died on March 15.

CONFERENCES

Sept. 26–28, Association of Military Surgeons of the United States, Denver, Colo.

Sept. 30–Oct. 5, American Public Health Association, Minneapolis, Minn.

Sept. 30–Oct. 5, American Child Health Association, Minneapolis, Minn.

Sept. 30–Oct. 5, International Society of Medical Health Officers, Minneapolis, Minn.

Sept. 30–Oct. 5, American Association of School Physicians, Minneapolis, Minn.

Sept. 30–Oct. 5, Northwest Conference of Child Health and Parent Education, Minneapolis, Minn.

Sept. 30–Oct. 5, Minnesota State Sanitary Conference, Minneapolis, Minn.

Sept. 30–Oct. 5, Minnesota State Public Health Association, Minneapolis, Minn.

Sept. 30–Oct. 5, Minnesota State Organization for Public Health Nursing, Minneapolis, Minn.

Sept. 30–Oct. 5, American Social Hygiene Association, Minneapolis, Minn.

Sept. 30–Oct. 5, Conference of State Laboratory Directors, Minneapolis, Minn.

Sept. 30–week, National Safety Council, Chicago, Ill.

Oct. 14–18, American College of Surgeons, Chicago, Ill.

Oct. 24–26, International Association of Milk Dealers, Toronto, Can.

FOREIGN

Aug. 22–29, Adult Education Conference, Cambridge, England.

Oct. 16, International Conference for the Revision of International Classification of Causes of Sickness and Death, Paris, France.

Summer Problem No. 3—DIARRHEA

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